TR79-F

DRS TR79 TAPE DIAG
CZTRACO

AH-9428C-MC
FICHE 1 OF 1

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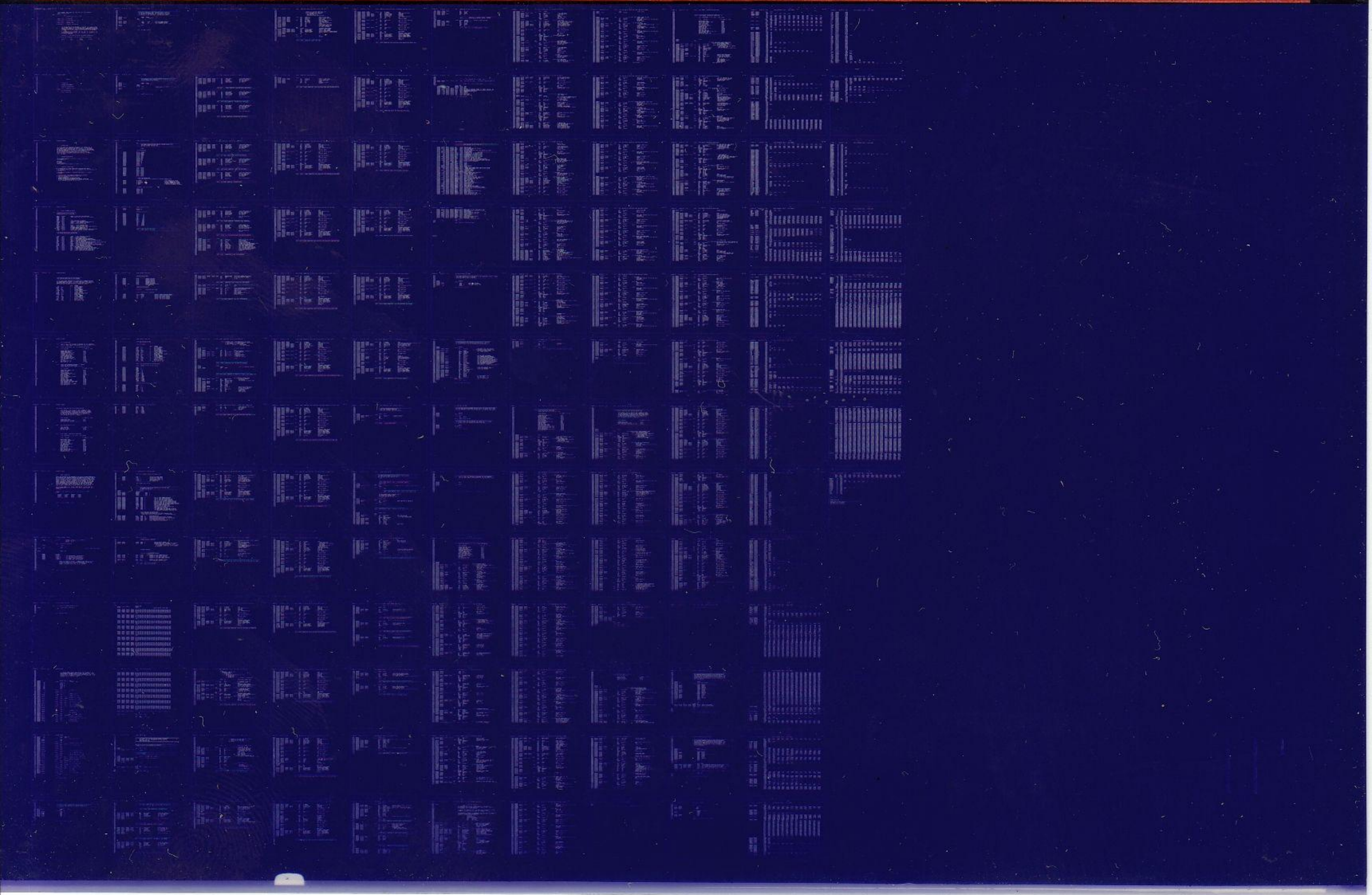

```
                        .TITLE CZTRACO  TR79F XXDP+ DRS COMPATIBLE MAG TAPE DIAGNOSTIC
                        .SBTTL PROGRAM DOCUMENT
                        .REM ^

                                        I D E N T I F I C A T I O N
                                        ---------------------------

                        PRODUCT CODE:   AC-9426C-MC

                        PRODUCT NAME:   CZTRACO TR79F TAPE DIAG

                        PRODUCT DATE    FEBRUARY 1982

                        MAINTAINER:     DIAGNOSTIC ENGINEERING


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                                DEC             DECUS           DECTAPE
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1.0 INTRODUCTION

THIS IS AN XXDP+ DRS COMPATIBLE DIAGNOSTIC TEST PROGRAM FOR THE
TR79F MAGNETIC TAPE TRANSPORT AND CONTROL UNIT. IT IS DESIGNED
FOR USE ON A PDP-11/70 WITH XXDP+ V1.1. THE TESTS IN THIS PROGRAM
ARE MODIFIED VERSIONS OF THE TESTS IN THE DIAGNOSTIC PROGRAM CZTRAB.
IN THIS PROGRAM TEST1 IS A NULL TEST WITH NO FUNCTION.
TESTS 2,3,4 AND 5 ARE BASED ON TESTS 2,3,4 AND 5 IN CZTRAB.
TEST6, THE TEST OF OPERATOR INTERVENTION FUNCTIONS, IS BASED ON
TEST1 IN CZTRAB.

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE TR79F MAG
TAPE DIAGNOSTIC.

PDP-11/70
16K MEMORY
CONSOLE TERMINAL
TR79F MAGNETIC TAPE TRANSPORT AND CONTROL UNIT

3.0 OPERATING INSTRUCTIONS

THIS PROGRAM MAY BE LOADED UNDER XXDP+ FROM ANY XXDP+ MEDIA.
IT IS DESIGNED TO RUN WITH XXDP+ DRS (DIAGNOSTIC RUN TIME SERVICES),
USING XXDP+ V1.1.

TO EXECUTE THIS DIAGNOSTIC STANDALONE UNDER XXDP+ V1.1 PROCEED
AS FOLLOWS.

A. LOAD AND START THE DIAGNOSTIC USING THE RUN COMMAND.
B. WAIT FOR THE RUN TIME SERVICES PROMPT DR>
C. TYPE IN START<CR>
D. ANSWER HARDWARE AND SOFTWARE QUESTIONS.
E. RESPOND TO REQUESTS TO PERFORM TR79F MANUAL OPERATIONS.
F. END OF PASS AND ERROR REPORTS WILL PRINT ON THE SYSTEM CONSOLE.
G. TO END PROGRAM EXECUTION TYPE IN CTRL/C.

CZTRAC.P11 30-DEC-81 11:08 PROGRAM DOCUMENT

```
                        4.0     DEVICE INFORMATION TABLES

                        ;//////////////////////////////////////
                        COMMAND REGISTER BIT DEFINITIONS
                        ;//////////////////////////////////////

                        GOBIT   = BIT0          ;GOBIT = 1 INITIATE TAPE OPERATION
                        FNB00   = BIT1          ;FBN03-FBN00 VALUE SPECIFIES TAPE FUNCTION
                        FNB01   = BIT2          ;
                        FNB02   = BIT3          ;
                        FNB03   = BIT4          ;
                        BUSY    = BIT5          ;TR79F OPERATION IN PROGRESS
                        INTENB  = BIT6          ;INTENB = 1 TR79 INTERRUPT ENABLE ASSERTED
                        CURDY   = BIT7          ;CURDY = 1 TR79F CONTROL UNIT READY
                        SBIT8   = BIT8          ;SBIT8-9 VALUE SPECIFIES UNIT
                        SBIT9   = BIT9          ;
                        MTRDY   = BIT10         ;MTRDY = 1 TR79F TRANSPORT READY
                        PWRCLR  = BIT11         ;PWRCLR = 1 INITIATE TR79F POWER CLEAR OPERATION
                        XBA16   = BIT12         ;EXTENDED UNIBUS ADDRESS BIT 16
                        XBA17   = BIT13         ;EXTENDED UBIBUS ADDRESS BIT 17
                        ILCMD   = BIT14         ;ILLEGAL TR79F COMMAND ATTEMPTED ERROR INDICATOR
                        ERRBIT  = BIT15         ;TR79F ERROR CONDITION DETECTED INDICATOR

                        ;//////////////////////////////////////////
                        ;TR79 STATUS REGISTER BIT DEFINITIONS
                        ;//////////////////////////////////////////


                        INHBT   = BIT0          ;INHBT = 1 TR79F OPERATION INHIBITED
                        RWDS    = BIT1          ;RWDS = 1 REWIND IN PROGRESS
                        FPTS    = BIT2          ;FPTS = 1 WRITE ENABLE RING NOT INSTALLED
                        EOFF    = BIT3          ;EOFF = 1 TAPE MARK DETECTED ON READ OR WRITE
                        IDBF    = BIT4          ;IDBF = 1 IDENTIFICATION BURST DETECTED ON READ OR WRITE
                        LDPTS   = BIT5          ;LDPTS = 1 TAPE AT LOAD POINT
                        NXMF    = BIT6          ;NXMF = 1 TR79F BUS ADDRESS REGISTER REFERENCES NON-EXISTENT MEM
                        EOTS    = BIT7          ;EOTS = 1 END OF TAPE REFLECTOR DETECTED
                        TMOUT   = BIT8          ;TMOUT = 1 TR79F OPERATION NOT COMPLETED IN TIME ALLOWED
                        RDCNT   = BIT9          ;RDCNT = 1 BYTES READ NOT EQUAL COUNT IN WORD COUNT REGISTER
                        ONLNS   = BIT10         ;ONLNS = 1 TR79F TRANSPORT IS ON-LINE
                        BGL     = BIT11         ;BGL = 1 BUS GRANT LATE ON READ OR WRITE
                        STEF    = BIT12         ;STEF = 1 ERROR DETECTED ON A SINGLE TAPE TRACK
                        MTEF    = BIT13         ;MTEF = 1 ERROR DETECTED ON MORE THAN ONE TAPE TRACK
                        WPEF    = BIT14         ;WPEF = 1 PARITY ERROR DETECTED DURING WRITE
                        RPEF    = BIT15         ;RPEF =1 PARITY ERROR DETECTED DURING READ
```

```
144
145
146
147                     ;/////////////////////////////////////////////
148                     ;TR79 FUNCTION CODES USED IN THIS PROGRAM
149                     ;/////////////////////////////////////////////
150
151                     THE FOLLOWING CODES REPRESENT THE VALUES USED IN COMMAND REGISTER
152                     BITS FNB03-FNB00 (BIT4-BIT1)  TO INVOKE PARTICULAR TR79F OPERATIONS.
153                     COMMAND REGISTER BIT0 MUST BE SET = 1 TO INITIATE AN OPERATION.
154                     UNIT VALUES ARE INCLUDED FOR TESTING CONTROL UNIT LOGIC.
155
156                                                ;UNIT   COMMAND
157                     ILC00   =0                 ;0      ILLEGAL COMMAND
158                     WRITE   =402               ;1      WRITE FORWARD
159                     READ    =4                 ;0      READ FORWARD
160                     ILC03   =406               ;1      ILLEGAL COMMAND
161                     SPACER  =1410              ;3      SPACE REVERSE 1 RECORD
162                     ILC05   =1012              ;2      ILLEGAL COMMAND
163                     ILC06   =1414              ;3      ILLEGAL COMMAND
164                     ERASE   =16                ;0      ERASE WORD COUNT FORWARD
165                     REWIND  =1020              ;1      REWIND TAPE
166                     ILC11   =22                ;0      ILLEGAL COMMAND
167                     ILC12   =424               ;1      ILLEGAL COMMAND
168                     GOEOT   =1026              ;2      FAST FORWARD TO EOT
169                     ILC14   =1030              ;2      ILLEGAL COMMAND
170                     WIDB    =432               ;1      WRITE I.D. BLOCK
171                     WEOF    =1034              ;2      WRITE END OF FILE
172                     OFLINE  =1436              ;3      TAKE UNIT OFF UNIT
173
174
```

5.0 TEST DESCRIPTIONS

TEST1 THIS IS A NULL TEST INCLUDED TO PRESERVE THE TEST NUMBERING USED IN CZTRAB. MANUAL INTERVENTION TESTS ARE INCLUDED IN TEST6

TEST2 CHECKS THE INTERFACE LOGIC WITH MINIMUM TAPE MOTION

TEST2 INCLUDES:	TEST NAME IN CZTRAB
REWIND FROM LOAD POINT	TESTI
INSURE WRITE RING	TESTC
UNIBUS EXTENSION BIT TEST	TESTD
INTERRUPT BIT SET TEST	TESTE
INTERRUPT BIT CLEAR TEST	TESTF
ILLEGAL COMMAND TEST	TESTJ
WRITE FROM LOAD POINT	TESTK
WRITE EOF FROM LOAD POINT	TESTM
TEST TR79 POWER CLEAR	TESTG
SPACE REVERSE AT LOAD POINT	TESTAT
NXM TEST	TESTAB
BUS ADDRESS BIT TEST	TESTAU
WORD COUNT BIT TEST	TESTBA

TEST3 CHECKS TR79 TRANSPORTS RESPONSE TO COMMANDS
CHECKS IDB AND EOF OPERATIONS
CHECKS COUNT AND PARITY ERROR DETECTION

TEST3 INCLUDES:	TEST NAME IN CZTRAB
INSURE WRITE ENABLE RING	TESTC
REWIND THE TAPE	TESTI
WRITE ID BLOCK	TESTO
ILLEGAL ID BLOCK TEST	TESTH
SPACE REVERSE OVER ID BLOCK	TESTAV
READ ID BLOCK	TESTAW
WRITE EOF MARKS	RUNL
SPACE REVERSE OVER EOF MARKS	RUNU
READ EOF MARKS	RUNV
TIME OUT TEST	TESTW
READ WITH COUNT LONG	TESTAC
READ WITH COUNT SHORT	TESTAD
SPACE REVERSE WITH COUNT SHORT	TESTAE
SPACE REVERSE WITH COUNT LONG	TESTAF
WRITE EVEN PARITY	TESTAX
SPACE REVERSE OVER EVEN PARITY	TESTAY
READ EVEN PARITY	TESTAZ

TEST4 WRITES, READS AND TESTS DATA WRITTEN ON TAPE

TEST4 WRITES A FILE OF DATA TO TAPE A NUMBER OF TIMES. THE FILE CONTAINS 15 BLOCKS OF DATA. EACH TIME A BLOCK IS WRITTEN THE DATA IS READ BACK AND CHECKED.THE NUMBER OF TIMES WRITING AND CHECKING A FILE IS REPEATED IS SPECIFIED IN THE SOFTWARE P-TABLE. THE DEFAULT VALUE FOR THIS REPEAT COUNT IS 10.(DECIMAL).

TEST4 INCLUDES:	TEST NAME IN CZTRAB
INSURE WRITE RING	TESTC
REWIND AND WRITE ID BLOCK	TESTO
WRITE,SPACE REV, READ AND TEST DATA	TESTXX

TEST5 READ DATA WRITTEN BY TEST4

TEST5 INCLUDES:	TEST NAME IN CZTRAB
REWIND THE TAPE	TESTI
READ THE ID BLOCK	TESTAW
READ THE TAPE	TESTXY

TEST6 CHECKS MANUAL INTERVENTION OPERATIONS

TEST6 CORRESPONDS TO TEST GROUP 1 FROM CZTRAB

TEST6 INCLUDES:	TEST NAME IN CZTRAB
REMOVE WRITE RING	TESTB
TRY TO WRITE WITHOUT RING	RUNAS
INSERT WRITE RING	TESTC
DELAY 10 SECONDS	TESTAJ
TAKE UNIT OFF LINE	TESTP
TELL OPERATOR TO RESET	TESTAK
REWIND THE TAPE	TESTI
WRITE PAST EOT	TESTAL
SPACE REVERSE PAST EOT	TESTAM
READ PAST EOT	TESTAN
WRITE EOF PAST EOT	TESTAO
SPACE REVERSE OVER EOF PAST EOT	TESTAP
READ EOF PAST EOT	TESTAQ
REWIND AND GO OFF LINE	TESTQ

6.0 ERROR INFORMATION

ERRORS ARE REPORTED BY THE PROGRAM AS THEY OCCUR IF ERROR REPORTING IS NOT INHIBITED. THIS PROGRAM CONSIDERS AN UNANTICIPATED VALUE IN ONE OR MORE OF THE TR79F CONTROL AND STATUS REGISTERS TO BE AN ERROR. ERROR REPORTS CONFORM TO THE XXDP+ DIAGNOSTIC RUN TIME SERVICES ERROR REPORT FORMAT. THE REPORTS SPECIFY THE ERROR TYPE AND NUMBER, THE TEST AND SUBTEST IN WHICH THE ERROR OCCURED, THE PC OF THE CALL TO THE ERROR REPORT SUBROUTINE, AND A DESCRIPTION OF THE TR79F OPERATION WHOSE INVOCATION GENERATED AN ERROR CONDITION. IN ADDITION, ACTUAL AND EXPECTED TR79F CONTROL AND STATUS REGISTER, AND I/O DATA VALUES ARE SHOWN IN BASIC ERROR REPORTS IF BASIC REPORTS ARE NOT INHIBITED.

THE FOLLOWING EXAMPLE IS A TYPICAL ERROR REPORT. IN THIS CASE THE REPORT IS PRODUCED BY THE DETECTION OF A PARITY ERROR DURING A WRITE OPERATION.

```
CZTRAC0 SFT ERR  00020 ON UNIT 00 TST 003 SUB 001 PC: 027070
WRITE

   REGISTER    LOCATION    EXPECTED    ACTUAL
   COMMAND     164000      002602      102602
   STATUS      164002      002001      102001
   WORD COUNT  164004      000000      000000

^
```

```
.SBTTL LISTING & ASSEMBLY CONTROL
```

```
CZTRAC.P11    30-DEC-81 11:08          LISTING & ASSEMBLY CONTROL

  308
  309           000000                 HELP=0          ; CONTROL LISTING OF HELP INFORMATION
  310                                                  ; HELP=0   NO LIST
  311                                                  ; HELP=1   LIST
  312
  313                                  .SBTTL  INITIALIZE SUPERVISOR
  314
  315           002000                         .=2000
  316
  317                                          .MCALL  SVC
  318  002000                                  SVC                                    ; INITIALIZE SUPERVISOR MACROS
  319
  320
  321  002000                                  BGNMOD TR79
  322
  323
  324           000001                 $LSTIN= 1
  325           000001                 $LSTTAG= 1
  326           000000                 SVCINS= 0       ; LIST INSTRUCTIONS, SHIFTED RIGHT
  327           000000                 SVCTST= 0       ; LIST TEST TAGS, SHIFTED RIGHT
  328           000000                 SVCSUB= 0       ; LIST SUBTEST TAGS, SHIFTED RIGHT
  329           000000                 SVCGBL= 0       ; LIST GLOBAL TAGS, SHIFTED RIGHT
  330           000000                 SVCTAG= 0       ; LIST OTHER TAGS, SHIFTED RIGHT
  331
  332                                  ;       CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
  333                                  ;       TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
  334                                  ;       SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
  335                                  ;       CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
  336
  337
  338
  339
  340
  341
  342                                  .SBTTL  SELECT OPTIONAL SECTIONS
```

CZTRAC.P11 30-DEC-81 11:08 SELECT OPTIONAL SECTIONS

```
                                ;* SELECTION OF OPTIONAL PROGRAM SECTIONS
002000                                  POINTER ERRTBL,BGNSW,BGNSFT
                                .SBTTL PROGRAM HEADER
```

CZTRAC.P11 30-DEC-81 11:08 PROGRAM HEADER

```
                                                ;++
                                                ;THE PROGRAM HEADER MACRO CHARACTERIZES THIS DIAGNOSTIC. THE
                                                ;HEADER MACRO'S ARGUMENTS ARE FILE NAME, RELEASE LEVEL, PATCH
                                                ;DISPOSITION OF THE MOST RECENT PATCH, MAXIMUM TEST TIME IN SEC.,
                                                ;AND THE TYPE OF DIAGNOSTIC (0-SEQUENTIAL, 1-EXERCISER).  THESE
                                                ;ARGUMENTS ARE IN RESPECTIVE ORDER.
                                                ;--


002000                                          HEADER CZTRA,C,0,7200.,0
002000                                  L$NAME::                ;DIAGNOSTIC NAME
002000  103                                     .ASCII /C/
002001  132                                     .ASCII /Z/
002002  124                                     .ASCII /T/
002003  122                                     .ASCII /R/
002004  101                                     .ASCII /A/
002005  000                                     .BYTE   0
002006  000                                     .BYTE   0
002007  000                                     .BYTE   0
002010                                  L$REV::                 ;REVISION LEVEL
002010  103                                     .ASCII  /C/
002011                                  L$DEPO::                ;0
002011  060                                     .ASCII  /0/
002012                                  L$UNIT::                ;NUMBER OF UNITS
002012  000000                                  .WORD   0
002014                                  L$TIML::                ;LONGEST TEST TIME
002014  016040                                  .WORD   7200.
002016                                  L$HPCP::                ;POINTER TO H.W. QUES.
002016  034460                                  .WORD   L$HARD
002020                                  L$SPCP::                ;POINTER TO S.W. QUES.
002020  034624                                  .WORD   L$SOFT
002022                                  L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002142                                  .WORD   L$HW
002024                                  L$SPTP::                ;PTR. TO S.W. PTABLE
002024  002152                                  .WORD   L$SW
002026                                  L$LADP::                ;DIAG. END ADDRESS
002026  035402                                  .WORD   L$LAST
002030                                  L$STA::                 ;RESERVED FOR APT STATS
002030  000000                                  .WORD   0
002032                                  L$CO::
002032  000000                                  .WORD   0
002034                                  L$DTYP::                ;DIAGNOSTIC TYPE
002034  000000                                  .WORD   0
002036                                  L$APT::                 ;APT EXPANSION
002036  000000                                  .WORD   0
002040                                  L$DTP::                 ;PTR. TO DISPATCH TABLE
002040  002124                                  .WORD   L$DISPATCH
002042                                  L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000000                                  .WORD   0
002044                                  L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                                  .WORD   0
002046                                  L$EXP1::                ;EXPANSION WORD
002046  000000                                  .WORD   0
002050                                  L$MREV::                ;SVC REV AND EDIT #
```

CZTRAC.P11 30-DEC-81 11:08

```
409  002050  003
410  002051  003
411  002052
412  002052  000000
413  002054  000000
414  002056
415  002056  000000
416  002060
417  002060  012322
418  002062
419  002062  000000
420  002064
421  002064  000000
422  002066
423  002066  000000
424  002070
425  002070  000000
426  002072
427  002072  000000
428  002074
429  002074  000000
430  002076
431  002076  012330
432  002100
433  002100  104035
434  002102
435  002102  002154
436  002104
437  002104  024034
438  002106
439  002106  024202
440  002110
441  002110  024200
442  002112
443  002112  024026
444  002114
445  002114  000000
446  002116
447  002116  000000
448  002120
449  002120  000000
450
451
452
453
454
```

PROGRAM HEADER

```
        .BYTE   C$REVISION
        .BYTE   C$EDIT
L$EF::                  ;DIAG. EVENT FLAGS
        .WORD   0
        .WORD   0
L$SPC::
        .WORD   0
L$DEVP::                ; POINTER TO DEVICE TYPE LIST
        .WORD   L$DVTYP
L$REPP::                ;PTR. TO REPORT CODE
        .WORD   0
L$EXP4::
        .WORD   0
L$EXP5::
        .WORD   0
L$AUT::                 ;PTR. TO ADD UNIT CODE
        .WORD   0
L$DUT::                 ;PTR. TO DROP UNIT CODE
        .WORD   0
L$LUN::                 ;LUN FOR EXERCISERS TO FILL
        .WORD   0
L$DESP::                ;POINTER TO DIAG. DESCRIPTION
        .WORD   L$DESC
L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
        EMT     E$LOAD
L$ETP::                 ;POINTER TO ERRTBL
        .WORD   L$ERRTBL
L$ICP::                 ;PTR. IO INIT CODE
        .WORD   L$INIT
L$CCP::                 ;PTR. TO CLEAN-UP CODE
        .WORD   L$CLEAN
L$ACP::                 ;PTR. TO AUTO CODE
        .WORD   L$AUTO
L$PRT::                 ;PTR. TO PROTECT TABLE
        .WORD   L$PROT
L$TEST::                ;TEST NUMBER
        .WORD   0
L$DLY::                 ;DELAY COUNT
        .WORD   0
L$HiME::                ;PTR. TO HIGH MEM
        .WORD   0

.EVEN


.SBTTL DISPATCH TABLE
```

```
                                ;////////////////////////////////////////////////////////////////////////
                                ;/ THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                                ;/ IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                                ;////////////////////////////////////////////////////////////////////////

                                        DISPATCH        6.
002122  000006                         .WORD   6
002124                          L$DISPATCH::
002124  024204                          .WORD   T1
002126  024206                          .WORD   T2
002130  026522                          .WORD   T3
002132  031316                          .WORD   T4
002134  032040                          .WORD   T5
002136  032344                          .WORD   T6


                                .SBTTL DEFAULT HARDWARE P-TABLE
```

```
CZTRAC.P 1    20-DEC-81 11:08          DEFAULT HARDWARE P-TABLE

   476
   477                                 ;////////////////////////////////////////////////////////////////////////////
   478                                 ;/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
   479                                 ;/ THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
   480                                 ;/ IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
   481                                 ;////////////////////////////////////////////////////////////////////////////
   482
   483  002140                                 BGNHW   DFPTBL
   484  002140  000003                        .WORD   L10000-L$HW/2
   485  002142                         L$HW::
   486  002142                         DFPTBL::
   487
   488  002142  164000                        .WORD     164000        ;TR79 CSR UNIBUS ADDRESS
   489  002144  000170                        .WORD      170          ;TR79 INTERRUPT VECTOR
   490  002146  000240                        .WORD     PRI05         ;TR79 INTERRUPT PRIORITY LEVEL = 5
   491
   492  002150                                 ENDHW
   493  002150                         L10000:
   494
   495
   496
   497                                 .SBTTL  SOFTWARE P-TABLE
```

```
                                ;////////////////////////////////////////////////////////////////////////
                                ;       THE SOFTWARE P-TABLE CONTAINS PROGRAM PARAMETERS WHOSE VALUE
                                ;       CAN BE CHANGED BY THE OPERATOR.
                                ;////////////////////////////////////////////////////////////////////////

002150                                  BGNSW   SFPTBL
002150  000001                        .WORD   L10001-L$SW/2
002152                          L$SW::
002152                          SFPTBL::
002152  000012                  RPTCNT: .WORD   10.              ;DEFAULT VALUE FOR NUMBER OF FILES WRITTEN
                                                                 ;  IN TEST4
002154                                  ENDSW
002154                          L10001:


                                .SBTTL GLOBAL EQUATES SECTION
```

```
                                ;//////////////////////////////////////////////////////////////////////////////
                                ;/      THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
                                ;/      ARE USED IN MORE THAN ONE TEST.
                                ;//////////////////////////////////////////////////////////////////////////////

002154                                  EQUALS
                                ;
                                ; BIT DIFINITIONS
                                ;
100000                          BIT15== 100000
040000                          BIT14== 40000
020000                          BIT13== 20000
010000                          BIT12== 10000
004000                          BIT11== 4000
002000                          BIT10== 2000
001000                          BIT09== 1000
000400                          BIT08== 400
000200                          BIT07== 200
000100                          BIT06== 100
000040                          BIT05== 40
000020                          BIT04== 20
000010                          BIT03== 10
000004                          BIT02== 4
000002                          BIT01== 2
000001                          BIT00== 1
                                ;
001000                          BIT9==  BIT09
000400                          BIT8==  BIT08
000200                          BIT7==  BIT07
000100                          BIT6==  BIT06
000040                          BIT5==  BIT05
000020                          BIT4==  BIT04
000010                          BIT3==  BIT03
000004                          BIT2==  BIT02
000002                          BIT1==  BIT01
000001                          BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
000040                          EF.START==      32.             ; START COMMAND WAS ISSUED
000037                          EF.RESTART==    31.             ; RESTART COMMAND WAS ISSUED
000036                          EF.CONTINUE==   30.             ; CONTINUE COMMAND WAS ISSUED
000035                          EF.NEW==        29.             ; A NEW PASS HAS BEEN STARTED
000034                          EF.PWR==        28.             ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
                                ;
000340                          PRI07== 340
000300                          PRI06== 300
000240                          PRI05== 240
000200                          PRI04== 200
000140                          PRI03== 140
000100                          PRI02== 100
```

CZTRAC.P11 30-DEC-81 11:08 GLOBAL EQUATES SECTION

```
000040                  PRI01== 40
000000                  PRI00== 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL==     4
000010                  LOT==    10
000020                  ADR==    20
000040                  IDU==    40
000100                  ISR==   100
000200                  UAM==   200
000400                  BOE==   400
001000                  PNT==  1000
002000                  PRI==  2000
004000                  IXE==  4000
010000                  IBE== 10000
020000                  IER== 20000
040000                  LOE== 40000
100000                  HOE==100000


                        ;-------------------------------------------------------------------------------
                        .SBTTL  GLOBAL EQUATES FROM CZTRA
                        ;-------------------------------------------------------------------------------
```

CZTRAC.P11 30-DEC-81 11:08 GLOBAL EQUATES FROM CZTRA

```
599
600                                 ;REGISTER DEFINITIONS
601                                 ;--------------------
602
603         000000                  R0=%0           ;GENERAL REGISTER
604         000001                  R1=%1           ;GENERAL REGISTER
605         000002                  R2=%2           ;GENERAL REGISTER
606         000003                  R3=%3           ;GENERAL REGISTER
607         000004                  R4=%4           ;GENERAL REGISTER
608         000005                  R5=%5           ;GENERAL REGISTER
609         000006                  SP=%6           ;PROCESSOR STACK POINTER
610         000007                  PC=%7           ;PROGRAM COUNTER
611
612                                 ;LOCATION EQUIVALENCES
613                                 ;---------------------
614
615         177776                  PS=177776       ;PROCESSOR STATUS WORD
616
617
618                                 ;DEFAULT TR79 REGISTER ADDRESSES
619
620         164000                  TCR=    164000                  ;DEFAULT CONTROL REGISTER ADDRESS
621         164002                  TSR=    164002                  ;DEFAULT STATUS REGISTER ADDRESS
622         164004                  TWC=    164004                  ;DEFAULT WORD COUNT ADDRESS
623         164006                  TBA=    164006                  ;DEFAULT BUS ADDRESS ADDRESS
624         000170                  TVA=    170                     ;DEFAULT TAPE VECTOR ADDRESS
625         000172                  TSA=    172                     ;DEFAULT TAPE STATUS ADDRESS
626
```

```
                        ;TR79 FUNCTION DEFINITIONS
                        ;-------------------------

                        ;TAPE TEST EQUALS

                                                    ;UNIT   COMMAND
000000                  ILC00   =0                  ;0      ILLEGAL COMMAND
000402                  WRITE   =402                ;1      WRITE FORWARD
000004                  READ    =4                  ;0      READ FORWARD
000406                  ILC03   =406                ;1      ILLEGAL COMMAND
001410                  SPACER  =1410               ;3      SPACE REVERSE 1 RECORD
001012                  ILC05   =1012               ;2      ILLEGAL COMMAND
001414                  ILC06   =1414               ;3      ILLEGAL COMMAND
000016                  ERASE   =16                 ;0      ERASE WORD COUNT FORWARD
001020                  REWIND  =1020               ;1      REWIND TAPE
000022                  ILC11   =22                 ;0      ILLEGAL COMMAND
000424                  ILC12   =424                ;1      ILLEGAL COMMAND
001026                  GOEOT   =1026               ;2      FAST FORWARD TO EOT
001030                  ILC14   =1030               ;2      ILLEGAL COMMAND
000432                  WIDB    =432                ;1      WRITE I.D. BLOCK
001034                  WEOF    =1034               ;2      WRITE END OF FILE
001436                  OFLINE  =1436               ;3      TAKE UNIT OFF UNIT

                        .SBTTL  BIT DEFINITIONS FOT TR79 REGISTERS

                        ;TRCR   COMMAND REGISTER BIT DEFINITIONS

000001                  GOBIT   = 1
000002                  FNB00   = 2
000004                  FNB01   = 4
000010                  FNB02   = 10
000020                  FNB03   = 20
000040                  BUSY    = 40
000100                  INTENB  = 100
000200                  CURDY   = 200
000400                  SBIT8   = 400
001000                  SBIT9   = 1000
002000                  MTRDY   = 2000
004000                  PWRCLR  = 4000
010000                  XBA16   = 10000
020000                  XBA17   = 20000
040000                  ILCMD   = 40000
100000                  ERRBIT  = 100000

                        ;TR79 STATUS REGISTER BIT DEFINITIONS

000001                  INHBT   = 1
000002                  RWDS    = 2
000004                  FPTS    = 4
000010                  EOFF    = 10
000020                  IDBF    = 20
000040                  LDPTS   = 40
000100                  NXMF    = 100
000200                  EOTS    = 200
```

CZTRAC.P11 30-DEC-81 11:08 BIT DEFINITIONS FOT TR79 REGISTERS

```
683   000400   TMOUT  = 400
684   001000   RDCNT  = 1000
685   002000   ONLNS  = 2000
686   004000   BGL    = 4000
687   010000   STEF   = 10000
688   020000   MTEF   = 20000
689   040000   WPEF   = 40000
690   100000   RPEF   = 100000
691
```

```
CZTRAC.P11    30-DEC-8: 11:08          BIT DEFINITIONS FOT TR79 REGISTERS


                                       .SBTTL MISCELLANEOUS EQUATES FOR ERROR CALLS


                 000000                ENUM = 0                ;INITIALIZE ERROR NUMBER
                 000000                T.ESF=  0               ;SYSTEM FATAL ERROR TYPE
                 000001                T.EDF=  1               ;DEVICE FATAL ERROR TYPE
                 000002                T.EHRD= 2               ;UNRECOVERABLE ERROR TYPE
                 000003                T.ESFT= 3               ;SOFT ERROR TYPE
                                       ;-----------------------------------------------


                                       .SBTTL GLOBAL DATA SECTION



                                       ;////////////////////////////////////////////////////////////////////////////////
                                       ;/      THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                                       ;/      IN MORE THAN ONE TEST.
                                       ;////////////////////////////////////////////////////////////////////////////////
                                            ERRTBL
 002154                                L$ERRTBL::
 002154  000000                       ERRTYP::        .WORD   0
 002156  000000                       ERRNBR::        .WORD   0
 002160  000000                       ERRMSG::        .WORD   0
 002162  000000                       ERRBLK::        .WORD   0

 002164  000000                       ATRCR:  .WORD   0               ;COPY OF TR79 COMMAND REGISTER
 002166  000000                       ATRSR:  .WORD   0               ;COPY OF TR79 STATUS REGISTER
 002170  000000                       ATRWC:  .WORD   0               ;COPY OF TR79 WORD COUNT REGISTER
 002172  000000                       ATRBA:  .WORD   0               ;COPY OF TR79 BUS ADDRESS REGISTER
 002174  000000                       ETRCR:  .WORD   0               ;EXPECTED VALUE FORTR79 COMMAND REGISTER
 002176  000000                       ETRSR:  .WORD   0               ;EXPECTED VALUE FOR TR79 STATUS REGISTER
 002200  000000                       ETRWC:  .WORD   0               ;EXPECTED VALUE FOR TR79 WORD COUNT REGISTER
 002202  000000                       ETRBA:  .WORD   0               ;EXPECTED VALUE FOR TR79 BUS ADDRESS REGISTER
 002204  000000                       AINPUT: .WORD   0               ;COPY OF WORD FROM INPUT AREA
 002206  000000                       EINPUT: .WORD   0               ;EXPECTED DATA IN INPUT AREA
 002210  000000                       LINPUT: .WORD   0               ;LOCATION OF DATA WORD IN INPUT AREA
 002212  000000                       USEA:   .WORD   0               ;TR79 FUNCTION TO EXECUTE
 002214  000000                       USEB:   .WORD   0               ;TR79 WORD COUNT FOR FUNCTION TO EXECUTE
 002216  000000                       USEC:   .WORD   0               ;TR79 BUS ADDRESS FOR FUNCTION TO EXECUTE
                                                                      ;  IF NEGATIVE THEN REPEAT LOOP UNTIL EOT

                                            ;DELAY CONSTANTS AND MULTIPLIERS
                                            ; THESE CONSTANTS ARE BASED ON 11/70 WITH CACHE,ALL HITS
                                            ; TIMING LOOPS (INC/DEC A REGISTER,BNE) = 0.9 MICROSECONDS/TICK

 002220  000000                       DLX:    .WORD   0       ;DELAY MULTIPLIER
 002222  000036                       DLXRW:  .WORD   30.     ;READ/WRITE DELAY MULTIPLIER(1.5 SECONDS)
 002224  000030                       DLXPWR: .WORD   24.     ;POWER CLEAR DELAY MULTIPLIE.(900 MILLISECONDS
 002226  000310                       DLXBEL: .WORD   200.    ;10 SECOND DELAY MULTIPLIER
 002230  000620                       DLXTOF: .WORD   400.    ;DELAY MULTIPLIER FOR PUTTING TAPE ON LINE
 002232  000062                       DLXLNG: .WORD   50.     ;FORCE TIMEOUT DELAY MULTIPLIER
```

```
CZTRAC.P11    30-DEC-81 11:08          GLOBAL DATA SECTION

                                               ;PROGRAM CONTROL PARAMETERS
                                               ;--------------------------

002234  000000                         LOGDEV: .WORD   0               ;LOGICAL DEVICE NUMBER
002236  000000                         PSTACK: .WORD   0               ;CONTAINS BASE LEVEL PROGRAM STACK POINTER
002240  000000                         INTFLG: .WORD   0               ;INTERRUPT RECEIVED FLAG.SET = -1 WHEN
                                                                       ;  TR79 INTERRUPT ENABLE BIT IS SET. CLEARED
                                                                       ;  BY INTERRUPT HANDLER WHEN TR79 INTERRUPT
                                                                       ;  IS RECEIVED.


                                               ;PROGRAM VARIABLES
                                               ;-----------------


                                               ;TR79 VECTOR AND REGISTER POINTERS

002242  164000                         TRCR:   164000          ;ADDRESS OF TR79 COMMAND REGISTER
002244  164002                         TRSR:   164002          ;ADDRESS OF TR79 STATUS REGISTER
002246  164004                         TRWC:   164004          ;ADDRESS OF TR79 WORD COUNT REGISTER
002250  164006                         TRBA:   164006          ;ADDRESS OF TR79 BUS ADDRESS REGISTER

002252  000170                         TRVCT:  170             ;ADDRESS OF TR79 INTERRUPT VECTOR
002254  000240                         TRPRT:  PRIO5           ;TR79 INTERRUPT PRIORITY LEVEL

                                       ;-----------------------------------------------------------------------
                                       .SBTTL  IOBUF   INPUT-OUTOUT BUFFERS
                                       ;-----------------------------------------------------------------------
```

CZTRAL.P11 30-DEC-81 11:08 IOBUF INPUT-OUTOUT BUFFERS

```
 772
 773
      002256  000000  000000          .NLIST  BEX
                                      BADOUT: 0,0
      002262                          OUTPUT:                         ;OUTPUT BUFFER STARTS HERE

      002262  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      002322  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      002362  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      002422  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                      ;100

      002462  000001  000002  000403  001,002,403,004,405,406,007,010,411,412,013,414,015,016,417,020
      002522  000421  000422  000023  421,422,023,424,025,026,427,430,031,032,433,034,435,436,037,040
      002562  000441  000442  000043  441,442,043,444,045,046,447,450,051,052,453,054,455,456,057,460
      002622  000061  000062  000463  061,062,463,064,465,466,067,070,471,472,073,474,075,076,477,100
                                      ;200

      002662  000501  000502  000103  501,502,103,504,105,106,507,510,111,112,513,114,515,516,117,520
      002722  000121  000122  000523  121,122,523,124,525,526,127,130,531,532,133,534,135,136,537,540
      002762  000141  000142  000543  141,142,543,144,545,546,147,150,551,552,153,554,155,156,557,160
      003022  000561  000562  000163  561,562,163,564,165,166,567,570,171,172,573,174,575,576,177,200
                                      ;300

      003062  000601  000602  000203  601,602,203,604,205,206,607,610,211,212,613,214,615,616,217,620
      003122  000221  000222  000623  221,222,623,224,625,626,227,230,631,632,233,634,235,236,637,640
      003162  000241  000242  000643  241,242,643,244,645,646,247,250,651,652,253,654,255,256,657,260
      003222  000661  000662  000263  661,662,263,664,265,266,667,670,271,272,673,274,675,676,277,700
                                      ;400

      003262  000301  000302  000703  301,302,703,304,705,706,307,310,711,712,313,714,315,316,717,320
      003322  000721  000722  000323  721,722,323,724,325,326,727,730,331,332,733,334,735,736,337,340
      003362  000741  000742  000343  741,742,343,744,345,346,747,750,351,352,753,354,755,756,357,760
      003422  000361  000362  000763  361,362,763,364,765,766,367,370,771,772,373,774,375,376,777,400
                                      ;500

      003462  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      003522  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      003562  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      003622  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                      ;600

      003662  000777  000400  000777  777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
      003722  000001  000001  000001  001,001,001,001,001,001,001,001,001,001,001,001,001,001,001,001
      003762  000010  000010  000010  010,010,010,010,010,010,010,010,010,010,010,010,010,010,010,010
      004022  000100  000100  000100  100,100,100,100,100,100,100,100,100,100,100,100,100,100,100,100
                                      ;700

      004062  000777  000400  000777  777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
      004122  000002  000002  000002  002,002,002,002,002,002,002,002,002,002,002,002,002,002,002,002
      004162  000020  000020  000020  020,020,020,020,020,020,020,020,020,020,020,020,020,020,020,020
      004222  000200  000200  000200  200,200,200,200,200,200,200,200,200,200,200,200,200,200,200,200
                                      ;1000
      004262  000777  000400  000777  777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
      004322  000004  000004  000004  004,004,004,004,004,004,004,004,004,004,004,004,004,004,004,004
      004362  000040  000040  000040  040,040,040,040,040,040,040,040,040,040,040,040,040,040,040,040
      004422  000400  000400  000400  400,400,400,400,400,400,400,400,400,400,400,400,400,400,400,400
```

```
                                        ;1100

      004462  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      004522  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      004562  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      004622  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1200
      004662  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      004722  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      004762  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005022  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1300
      005062  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005122  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005162  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005222  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1400
      005262  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005322  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005362  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005422  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1500
      005462  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005522  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005562  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005622  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1600
      005662  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005722  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      005762  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      006022  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;1700
      006062  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      006122  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      006162  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
      006222  000652  000525  000652  652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
                                        ;2000
      006262  000777  000777  000777  777,777,777,777,777,777,777,777,777,777,777,777,777,777,777,777

      006322  002000                  INPUT:  .BLKW   2000

                                        .LIST   BEX
774                                     .SBTTL GLOBAL TEXT SECTION
```

```
                                ;%%%
```

```
                                ;////////////////////////////////////////////////////////////////////////
                                ;/      THE GLOBAL SUBROUTINES ARE CALLED BY MORE THAN ONE TEST
                                ;////////////////////////////////////////////////////////////////////////


                                ;-------------------------------------------------------------------
                                        .SBTTL  RWIND GLOBAL SUBROUTINE --PERFORM REWIND--
                                ;-------------------------------------------------------------------

012416  042777  000001  167620  RWIND:  BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
012424  012777  000000  167614          MOV     #0,@TRWC                ;SET DATA WORD COUNT
012432  012777  000000  167610          MOV     #0,@TRBA                ;SET DATA ADDRESS
012440  012777  001020  167574          MOV     #REWIND,@TRCR           ;SET FUNCTION
012446  052777  000001  167566          BIS     #BIT0,@TRCR             ;SET GO BIT
012454  000240                          NOP                             ;
012456  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
012462  000207                          RTS     PC


                                ;-------------------------------------------------------------------
                                .SBTTL  WTIDB GLOBAL SUBROUTINE --WRITE ID BLOCK--
                                ;-------------------------------------------------------------------

012464  042777  000001  167552  WTIDB:  BIC     #BIT0,@TRSR             ;CLEAR INHIBIT BIT
012472  012777  000000  167546          MOV     #0,@TRWC                ;SET DATA WORD COUNT
012500  012777  000000  167542          MOV     #0,@TRBA                ;SET DATA ADDRESS
012506  012777  000432  167526          MOV     #WIDB,@TRCR             ;SET FUNCTION
012514  052777  000001  167520          BIS     #BIT0,@TRCR             ;SET GO BIT IN FUNCTION
012522  000240                          NOP                             ;
012524  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
012530  000207                          RTS     PC


                                ;-------------------------------------------------------------------
                                .SBTTL  OFFLN GLOBAL SUBROUTINE --PERFORM OFF LINE COMMAND--
                                ;-------------------------------------------------------------------

012532  042777  000001  167504  OFFLN:  BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
012540  012777  000000  167500          MOV     #0,@TRWC                ;SET DATA WORD COUNT
012546  012777  000000  167474          MOV     #0,@TRBA                ;SET DATA ADDRESS
012554  012777  001436  167460          MOV     #OFLINE,@TRCR           ;SET FUNCTION
012562  052777  000001  167452          BIS     #BIT0,@TRCR             ;SET GO BIT
012570  000240                          NOP                             ;
012572  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
012576  000207                          RTS     PC


                                ;-------------------------------------------------------------------
                                .SBTTL  GEOT GLOBAL SUBROUTINE --PERFORM FAST FORWARD TO EOT--
```

```
CZTRAC.P11    30-DEC-81 11:08          GEOT GLOBAL SUBROUTINE --PERFORM FAST FORWARD TO EOT--
   867                                 ;-----------------------------------------------------------------------
```

```
                                                                                
                                                                                
012600  042777  000001  167436  GEOT:   BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
012606  012777  000000  167432          MOV     #0,@TRWC                ;SET DATA WORD COUNT
012614  012777  000000  167426          MOV     #0,@TRBA                ;SET DATA ADDRESS
012622  012777  001026  167412          MOV     #GOEOT,@TRCR            ;SET FUNCTION
012630  052777  000001  167404          BIS     #BIT0,@TRCR             ;SET GO BIT
012636  000240                          NOP                             ;
012640  000207                          RTS     PC
                                                                                
                                                                                
                                ;---------------------------------------------------------------
                                .SBTTL WRT      GLOBAL SUBROUTINE --PERFORM WRITE FROM OUTPUT--
                                ;---------------------------------------------------------------
                                                                                
                                                                                
012642  042777  000001  167374  WRT:    BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
012650  013777  002214  167370          MOV     USEB,@TRWC              ;SET DATA WORD COUNT
012656  012777  002262  167364          MOV     #OUTPUT,@TRBA           ;SET DATA ADDRESS
012664  012777  000402  167350          MOV     #WRITE,@TRCR            ;SET FUNCTION
012672  052777  000001  167342          BIS     #BIT0,@TRCR             ;SET GO BIT
012700  000240                          NOP                             ;
012702  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
012706  000207                          RTS     PC
                                                                                
                                                                                
                                ;---------------------------------------------------------------
                                .SBTTL  WRTC GLOBAL SUBROUTINE --PERFORM WRITE FROM @USEC--
                                ;---------------------------------------------------------------
                                                                                
                                                                                
012710  042777  000001  167326  WRTC:   BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
012716  013777  002214  167322          MOV     USEB,@TRWC              ;SET DATA WORD COUNT
012724  013777  002216  167316          MOV     USEC,@TRBA              ;SET DATA ADDRESS
012732  012777  000402  167302          MOV     #WRITE,@TRCR            ;SET FUNCTION
012740  052777  000001  167274          BIS     #BIT0,@TRCR             ;SET GO BIT
012746  000240                          NOP                             ;
012750  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
012754  000207                          RTS     PC
                                                                                
                                                                                
                                ;---------------------------------------------------------------
                                .SBTTL  RD GLOBAL SUBROUTINE --PERFORM READ FROM INPUT--
                                ;---------------------------------------------------------------
```

```
                                                                                
                                                                                
013756  042777  000001  167260  RD:     BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
013764  013777  002214  167254          MOV     USEB,@TRWC              ;SET DATA WORD COUNT
013772  012777  006322  167250          MOV     #INPUT,@TRBA            ;SET DATA ADDRESS
013000  012777  000004  167234          MOV     #READ,@TRCR             ;SET FUNCTION
013006  052777  000001  167226          BIS     #BIT0,@TRCR             ;SET GO BIT
013014  000240                          NOP                             ;
013016  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
013022  000207                          RTS     PC
                                                                                
                                        ;-------------------------------------------------------------
                                        .SBTTL  SPR GLOBAL SUBROUTINE --PERFORM SPACE REVERSE--
                                        ;-------------------------------------------------------------
                                                                                
013024  042777  000001  167212  SPR:    BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
013032  013777  002214  167206          MOV     USEB,@TRWC              ;SET DATA WORD COUNT
013040  012777  000000  167202          MOV     #0,@TRBA                ;SET DATA ADDRESS
013046  012777  001410  167166          MOV     #SPACER,@TRCR           ;SET FUNCTION
013054  052777  000001  167160          BIS     #BIT0,@TRCR             ;SET GO BIT
013062  000240                          NOP                             ;
013064  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
013070  000207                          RTS     PC
                                                                                
                                        ;-------------------------------------------------------------
                                        .SBTTL  WTEOF GLOBAL SUBROUTINE --WRITE EOF(TAPE MARK)--
                                        ;-------------------------------------------------------------
                                                                                
013072  042777  000001  167144  WTEOF:  BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
013100  012777  000000  167140          MOV     #0,@TRWC                ;SET DATA WORD COUNT
013106  012777  000000  167134          MOV     #0,@TRBA                ;SET DATA ADDRESS
013114  012777  001034  167120          MOV     #WEOF,@TRCR             ;SET FUNCTION
013122  052777  000001  167112          BIS     #BIT0,@TRCR             ;SET GO BIT
013130  000240                          NOP                             ;
013132  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
013136  000207                          RTS     PC
                                                                                
                                        ;-------------------------------------------------------------
                                        .SBTTL  ERS GLOBAL SUBROUTINE --PERFORM ERASE--
                                        ;-------------------------------------------------------------
```

```
                                                                                
                                                                                
013140  042777  000001  167076  ERS:    BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
013146  013777  002214  167072          MOV     USEB,@TRWC              ;SET DATA WORD COUNT
013154  012777  002262  167066          MOV     #OUTPUT,@TRBA           ;SET DATA ADDRESS
013162  012777  000016  167052          MOV     #ERASE,@TRCR            ;SET FUNCTION
013170  052777  000001  167044          BIS     #BIT0,@TRCR             ;SET GO BIT
013176  000240                          NOP                             ;
013200  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
013204  000207                          RTS     PC                      ;RETURN
                                                                                
                                                                                
                                        ;---------------------------------------------------------
                                        .SBTTL  DOILC GLOBAL SUBROUTINE --PERFORM ILLEGAL OPERATION--
                                        ;---------------------------------------------------------
                                                                                
                                                                                
013206  042777  000001  167030  DOILC:  BIC     #BIT0,@TRSR             ;CLEAR INHIBIT BIT
013214  012777  000000  167024          MOV     #0,@TRWC                ;SET DATA WORD COUNT
013222  012777  000000  167020          MOV     #0,@TRBA                ;SET DATA ADDRESS
013230  052737  000001  002212          BIS     #BIT0,USEA              ;SET GO BIT IN FUNCTION
013236  013777  002212  166776          MOV     USEA,@TRCR              ;INITIATE OPERATION
013244  000240                          NOP
013246  004737  013402                  JSR     PC,TESTA                ;WAIT FOR OPERATION
013252  000207                          RTS     PC                      ;RETURN
                                                                                
                                                                                
                                        ;---------------------------------------------------------------
                                        .SBTTL  CPYTRR  COPY TR79 REGISTERS AND CLEAR EXPECTED RESULTS
                                        ;---------------------------------------------------------------
                                                                                
                                                                                
013254                                  CPYTRR:
013254  012702  002164                          MOV     #ATRCR,R2               ;POINT TO 1ST COPY LOCATION
013260  010246                                  MOV     R2,-(SP)                ;SAVE POINTER
013262  012701  000010                          MOV     #10,R1                  ;SPECIFY COUNTER
013266  005022                          10$:    CLR     (R2)+                   ;CLEAR COPY LOCATIONS
013270  077102                                  SOB     R1,10$                  ;IF MORE TO CLEAR THEN REPEAT CLEAR
013272  012602                                  MOV     (SP)+,R2                ;RESTORE COPY LOCATION POINTER
013274  017722  166742                          MOV     @TRCR,(R2)+             ;COPY TR79 COMMAND REGISTER
013300  017722  166740                          MOV     @TRSR,(R2)+             ;COPY TR79 STATUS REGISTER
013304  017722  166736                          MOV     @TRWC,(R2)+             ;COPY TR79 WORD COUNT REGISTER
013310  017722  166734                          MOV     @TRBA,(R2)+             ;COPY TR79 BUS ADDRESS REGISTER
013314  004737  013442                          JSR     PC,CHKBRK               ;CHECK FOR OPERATOR INTERRUPT
013320  005002                                  CLR     R2                      ;CLEAR ERROR INDICATOR
013322  000207                                  RTS     PC                      ;RETURN
                                                                                
                                                                                
                                        ;---------------------------------------------------------
                                        .SBTTL  CPWR    SUBROUTINE TO CLEAR TR79 INTERFACE
                                        ;---------------------------------------------------------
```

```
CZTRAC.P11    30-DEC-81 11:08          CPWR    SUBROUTINE TO CLEAR TR79 INTERFACE

 1008
 1009  013324  052777  004000  166710  CPWR:   BIS     #PWRCLR,@TRCR   ;CLEAR TR79 COMMAND AND STATUS
 1010  013332  032777  004000  166702  10$:    BIT     #PWRCLR,@TRCR   ;HAS CLEAR OPERATION COMPLETED?
 1011  013340  001374                          BNE     10$             ;IF NO, WAIT UNTIL IT DOES
 1012  013342  000207                          RTS     PC              ;RETURN
 1013
 1014
 1015                                  ;-----------------------------------------------------------------
 1016                                  .SBTTL  WWAIT   SUBROUTINE TO WAIT A SPECIFIED TIME INTERVAL
 1017                                  ;-----------------------------------------------------------------
 1018
 1019  013344  013737  002230  002220  TWAIT:  MOV     DLXTOF,DLX      ;SPECIFY DELAY MULTIPLIER FOR TAPE OFF LINE
 1020  013352  000403                          BR      WWAIT           ;WAIT
 1021
 1022  013354  013737  002222  002220  RWWAIT: MOV     DLXRW,DLX       ,SPECIFY READ/WRITE DELAY MULTIPLIER
 1023  013362  005001                  WWAIT:  CLR     R1              ;CLEAR DELAY CONSTANT REGISTER
 1024  013364  013702  002220                  MOV     DLX,R2          ;COPY DELAY MULTIPLIER
 1025  013370  005201                  10$:    INC     R1              ;COUNT A TICK
 1026  013372  001376                          BNE     10$             ;KEEP TICKING
 1027  013374  005302                          DEC     R2              ;COUNT DOWN DELAY MULTIPLIER
 1028  013376  001374                          BNE     10$             ;KEEP TICKING
 1029  013400  000207                          RTS     PC              ;RETURN TO CALLER
 1030
 1031
 1032
 1033                                  ;-----------------------------------------------------------------
 1034                                  .SBTTL  TESTA GLOBAL SUBROUTINE  WAIT FOR TR79 OPERATION
 1035                                  ;-----------------------------------------------------------------
```

```
1036                                    ;+
1037                                    ;TESTA IS ENTERED AFTER A TR79 OPERATION IS INITIATED
1038                                    ;       IF TIME ELAPSED > 40 MICROSEC(ROUGHLY) THEN RETURN
1039                                    ;       IF TR79 ERROR BIT = 1 THEN RETURN
1040                                    ;       IF MTRDY = 1 AND CURDY = 1 THEN RETURN
1041                                    ;                                  ELSE KEEP CHECKING
1042                                    ;-
1043
1044  013402  005001                    TESTA:  CLR     R1              ;SET DELAY CONSTANT
1045  013404                            1$:
1046  013404  005201                            INC     R1              ;TICK
1047  013406  001414                            BEQ     2$              ;IF DELAY CONSTANT = 0 THEN EXIT
1048  013410  032777  100000  166624            BIT     #BIT15,@TRCR    ;IF TR79 ERROR BIT = 1
1049  013416  001010                            BNE     2$              ; THEN EXIT
1050  013420  032777  002000  166614            BIT     #BIT10,@TRCR    ;IF MTRDY BIT = 0
1051  013426  001766                            BEQ     1$              ; THEN KEEP CHECKING
1052  013430  032777  000200  166604            BIT     #BIT7,@TRCR     ;IF CURDY BIT = 0
1053  013436  001762                            BEQ     1$              ;  THEN KEEP CHECKING
1054  013440                            2$:
1055  013440  000207                            RTS     PC              ;RETURN
1056
1057
1058
1059                                    ;-------------------------------------------------------
1060                                    .SBTTL  CHKBRK  SUBROUTINE CHECKS FOR OPERATOR INTERRUPT
1061                                    ;-------------------------------------------------------
1062
1063  013442                            CHKBRK:
1064  013442                                    BREAK                   ;CHECK FOR OPERATOR INTERRUPT
1065  013442  104422                            TRAP    C$BRK
1066  013444  000207                            RTS     PC
1067
1068
1069
1070
1071                                    ;-------------------------------------------------------------
1072                                    .SBTTL TESTC GLOBAL SUBROUTINE ASK OPERATOR TO INSTALL WRITE ENABLE RING
1073                                    ;-------------------------------------------------------------
1074
1075
1076  013446                            TESTC:                          ;ASK OPERATOR TO INSTALL RING
1077  013446  032777  000004  166570            BIT     #BIT2,@TRSR             ;IF RING IS PRESENT
1078  013454  001426                            BEQ     30$             ;THEN RETURN
1079  013456                            10$:    PRINTF  #FMTTXT,#FMTRGI         ;ASK OPERATOR TO INSTALL RING
1080  013456  012746  022103                    MOV     #FMTRGI,-(SP)
1081  013462  012746  020473                    MOV     #FMTTXT,-(SP)
1082  013466  012746  000002                    MOV     #2,-(SP)
1083  013472  010600                            MOV     SP,R0
1084  013474  104417                            TRAP    C$PNTF
1085  013476  062706  000006                    ADD     #6,SP
1086  013502  013702  002230                    MOV     DLXTOF,R2               ;SPECIFY DELAY MULTIPLIER
1087  013506  005001                            CLR     R1              ;SPECIFY DELAY CONSTANT
1088  013510  032777  000004  166526  20$:     BIT     #BIT2,@TRSR             ;IF RING IS PRESENT
1089  013516  001405                            BEQ     30$             ;THEN RETURN
1090  013520  005201                            INC     R1              ;COUNT A TICK
1091  013522  001372                            BNE     20$             ;KEEP CHECKING
```

```
1092  013524  005302          DEC     R2                      ;COUNT DOWN DELAY MULTIPLIER
1093  013526  001370          BNE     20$                     ;KEEP CHECKING
1094  013530  000752          BR      10$                     ;ASK AGAIN
1095  013532                  30$:                    ;RING IS PRESENT
1096  013532  000207          RTS     PC
1097
1098
1099                          ;-------------------------------------------------------------
1100                          .SBTTL CHEKI GLOBAL SUBROUTINE CHECKS TR79 REGISTERS AFTER VALID REWIND
1101                          ;-------------------------------------------------------------
```

```
1102
1103  013534                                  CHEKI:
1104  013534  032777  000002  166502  1$:     BIT     #BIT1,@TRSR             ;WAIT FOR REWIND IN PROGRESS BIT
1105  013542  001374                          BNE     1$                      ; TO CLEAR
1106  013544  032777  000040  166472  2$:     BIT     #BIT5,@TRSR             ;WAIT FOR AT LOAD POINT STATUS
1107  013552  001774                          BEQ     2$                      ;TO BE ASSERTED
1108  013554  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1109  013560  012737  003220  002174          MOV     #3220,ETRCR             ;SPECIFY EXPECTED TRCR
1110  013566  012737  002041  002176          MOV     #2041,ETRSR             ;SPECIFY EXPECTED RESULT
1111  013574  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1112  013602  001401                          BEQ     10$                     ;OK
1113  013604  005202                          INC     R2                      ;INDICATE ERROR
1114  013606                                  10$:
1115  013606  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST STATUS REGISTER
1116  013614  001401                          BEQ     20$                     ;OK
1117  013616  005202                          INC     R2                      ;INDICATE ERROR
1118  013620                                  20$:
1119  013620  005702                          TST     R2                      ;ANY ERRORS?
1120  013622  001415                          BEQ     30$                     ;NO.
1121          000001                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
1122  013624  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1123  013632  012737  000001  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1124  013640  012737  021156  002160          MOV     #MRW,ERRMSG             ;SPECIFY ERROR MESSAGE
1125  013646  012737  020064  002162          MOV     #ERR4,ERRBLK            ;SPECIFY ERROR HANDLER
1126  013654  000261                          SEC                             ;SET C = 1
1127  013656  004737  013324          30$:    JSR     PC,CPWR                 ;RESET TR79
1128  013662  000207                          RTS     PC
1129                                  ;-------------------------------------------------------------------
1130                                  .SBTTL  TESTJ SUBROUTINE CHECKS TR79 REGISTERS AFTER ILLEGAL COMMANDS
1131                                  ;-------------------------------------------------------------------
```

```
 1132
 1133  013664                                  CHEKJ:                          ;CHECKS TR79 REGISTERS AFTER ILLEGAL COMMANDS
 1134  013664  004737  013354                          JSR     PC,RWWAIT       ;WAIT
 1135  013670  004737  013254                          JSR     PC,CPYTRR       ;COPY TR79 REGISTERS
 1136  013674  012737  142200  002174                  MOV     #142200,ETRCR   ;SPECIFY EXPECTED TRCR
 1137  013702  012737  002040  002176                  MOV     #2040,ETRSR     ;EXPECTED STATUS
 1138  013710  042737  001436  002164                  BIC     #1436,ATRCR     ;CLEAR UNWANTED BITS IN COMMAND REGISTER
 1139  013716  023737  002174  002164                  CMP     ETRCR,ATRCR     ;TEST COMMAND REGISTER
 1140  013724  001401                                  BEQ     10$             ;COMMAND REGISTER OK
 1141  013726  005202                                  INC     R2              ;INDICATE ERROR
 1142  013730                                  10$:
 1143  013730  023737  002176  002166                  CMP     ETRSR,ATRSR     ;TEST STATUS REGISTER
 1144  013736  001401                                  BEQ     20$             ;STATUS OK
 1145  013740  005202                                  INC     R2              ;INDICATE ERROR
 1146  013742                                  20$:
 1147  013742  005702                                  TST     R2              ;IF NO  REGISTER ERRORS
 1148  013744  001401                                  BEQ     30$             ;EXIT WITH C = 0
 1149  013746  000261                                  SEC                     ;SET C = 1
 1150  013750  004737  013324                  30$:    JSR     PC,CPWR         ;TR79 POWER CLEAR
 1151  013754  000207                                  RTS     PC
 1152
 1153
 1154                                          ;-------------------------------------------------------------------------
 1155                                          ;SBTTL CHEKL GLOBAL SUBROUTINE  CHECKS REGISTERS AFTER WRITING EOF(TAPE MARK)
 1156                                          ;-------------------------------------------------------------------------
```

```
CZTRAC.P11    30-DEC-81 11:08          CHEKL GLOBAL SUBROUTINE  CHECKS REGISTERS AFTER WRITING EOF(TAPE MARK)

 1157
 1158
 1159  013756  004737  013354          CHEKL:  JSR     PC,RWWAIT               ;WAIT
 1160  013762  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 1161  013766  012737  003234  002174          MOV     #3234,ETRCR             ;EXPECTED
 1162  013774  012737  002011  002176          MOV     #2011,ETRSR             ;EXPECTED
 1163  014002  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 1164  014010  001401                          BEQ     10$                     ;OK
 1165  014012  005202                          INC     R2                      ;INDICATE ERROR
 1166  014014                          10$:
 1167  014014  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 1168  014022  001401                          BEQ     20$                     ;OK
 1169  014024  005202                          INC     R2                      ;INDICATE ERROR
 1170  014026                          20$:
 1171  014026  005702                          TST     R2                      ;ANY ERRORS
 1172  014030  001415                          BEQ     30$                     ;NO
 1173          000002          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
 1174  014032  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
 1175  014040  012737  000002  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
 1176  014046  012737  022413  002160          MOV     #MWEFFL,ERRMSG          ;SPECIFY ERROR MESSAGE
 1177  014054  012737  020064  002162          MOV     #ERR4,ERRBLK            ;SPECIFY ERROR HANDLER
 1178  014062  000261                          SEC                             ;SET C = 1
 1179  014064  000207                  30$:    RTS     PC                      ;RETURN
 1180
 1181                                  ;*****************************************************************
 1182                                          .SBTTL TESTN GLOBAL SUBROUTINE  CHECK IF TR79 READY FOR OPERATION
 1183                                  ;*****************************************************************
```

```
1184                                        ;TESTN:
1185                                        ;IF TRANSPORT IS NOT ON LINE
1186                                        ;  THEN RECORD ERROR
1187                                        ;       RETURN WITH C =1
1188                                        ;  ELSE IF CONTROL UNIT OR TRANSPORT NOT READY
1189                                        ;         THEN RECORD ERROR
1190                                        ;              RETURN WITH C = 1
1191                                        ;         ELSE RETURN WITH C = 0  (TR79 READY FOR OPERATION)
1192
1193                                        .ENABL  LSB                     ;BEGIN LOCAL SYMBOL BLOCK
1194
1195  014066  032777  002000  166150 TESTN: BIT     #BIT10,@TRSR            ;IF TRANSPORT IS ON LINE
1196  014074  001007                       BNE     10$                     ;  THEN CHECK READY
1197                                                                ;NOT ON LINE
1198          000003                 ENUM = ^D<ENUM + 1>                    ;INCREMENT ERROR NUMBER
1199  014076  012737  020766  002160        MOV     #EM2,ERRMSG             ;SPECIFY POINTER TO ERROR MESSAGE
1200  014104  012737  000003  002156        MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1201  014112  000415                       BR      30$                     ;GOTO COMPLETE ERROR REPORT
1202  014114                         10$:                                   ;ON LINE
1203  014114  032777  002000  166120 TSTRDY: BIT     #MTRDY,@TRCR            ;IF TRANSPORT NOT READY
1204  014122  001403                       BEQ     20$                     ;  THEN RECORD ERROR
1205  014124  105777  166112               TSTB    @TRCR                   ;IF CONTROL UNIT READY
1206  014130  100415                       BMI     40$                     ;  THEN EXIT WITH C = 0
1207  014132                         20$.                                   ;NOT READY
1208          000004                 ENUM = ^D<ENUM + 1>                    ;INCREMENT ERROR NUMBER
1209  014132  012737  021040  002160        MOV     #EM2A,ERRMSG            ;SPECIFY POINTER TO ERROR MESSAGE
1210  014140  012737  000004  002156        MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1211  014146                         30$:                                   ;COMPLETE ERROR RECORD
1212  014146  012737  000003  002154        MOV     #T.ESFT,ERRTYP          ;SPECIFY 'SOFT' ERROR
1213  014154  012737  017754  002162        MOV     #ERR3,ERRBLK            ;SPECIFY POINTER TO ERROR HANDLER
1214  014162  000261                       SEC                             ;SET C = 1
1215  014164  000207                 40$:  RTS     PC                      ;RETURN
1216                                        .DSABL  LSB                     ;END LOCAL SYMBOL BLOCK
1217
1218
1219                                  ;-----------------------------------------------------------------------
1220                                        .SBTTL TESTNN GLOBAL SUBROUTINE  ASK OPERATOR TO PUT TAPE ON LINE
1221                                  ;-----------------------------------------------------------------------
```

```
1222
1223                                        ;+
1224                                        ;TESTNN:        IF TRANSPORT IS ON LINE THEN TEST IF READY
1225                                        ;               IF 1 MINUTE HAS ELAPSED THEN
1226                                        ;TESTN1:        ASK OPERATOR TO PUT TRANSPORT ON LINE
1227                                        ;               GOTO TESTNN
1228                                        ;-
1229
1230
1231                                        .ENABL  LSB                     ;BEGIN LOCAL SYMBOL BLOCK
1232
1233  014166                            TESTNN:                         ;WAIT FOR TRANSPORT ON LINE
1234  014166  013702  002230           10$:    MOV     DLXTOF,P2               ;SPECIFY DELAY MULTIPLIER
1235  014172  005001                            CLR     R1                      ;SPECIFY DELAY CONSTANT
1236  014174  032777  002000  166042   20$:    BIT     #BIT10,@TRSR            ;IF TRANSPORT IS ON LINE
1237  014202  001017                            BNE     30$                     ; THEN CHECK ERROR INDICATOR
1238  014204  005201                            INC     R1                      ;COUNT A TICK
1239  014206  001372                            BNE     20$                     ;KEEP CHECKING
1240  014210  005302                            DEC     R2                      ;COUNT DOWN DELAY MULTIPLIER
1241  014212  001370                            BNE     20$                     ;KEEP CHECKING
1242                                                                    ;ASK OPERATOR TO PUT TRANSPORT ON LINE
1243  014214                            TESTN1: PRINTF  #FMTTXT,#M2A            ;ASK OPERATOR TO PUT TRANSPORT ON LINE
1244  014214  012746  021057                    MOV     #M2A,-(SP)
1245  014220  012746  020473                    MOV     #FMTTXT,-(SP)
1246  014224  012746  000002                    MOV     #2,-(SP)
1247  014230  010600                            MOV     SP,R0
1248  014232  104417                            TRAP    C$PNTF
1249  014234  062706  000006                    ADD     #6,SP
1250  014240  000752                            BR      10$                     ;CHECK IF ON LINE
1251  014242                            30$:                            ;ON LINE
1252  014242  005777  165774                    TST     @TRCR                   ;IF NO ERROR
1253  014246  100001                            BPL     40$                     ;  THEN RETURN WITH C = 0
1254  014250  000261                            SEC                             ;  ELSE RETURN WITH C = 1
1255  014252  000207                    40$:    RTS     PC
1256                                        .DSABL  LSB                     ;END LOCAL SYMBOL BLOCK
1257
1258                                        ;-----------------------------------------------------------------------
1259                                        .SBTTL  CHEKO - TEST RESULT AFTER WRITE IDB FROM LOAD POINT
1260                                        ;----------------------------------------------------------------------- --
```

```
1261
1262
1263  014254                                  CHEKO:
1264  014254  004737  013354                        JSR     PC,RWWAIT               ;WAIT
1265  014260  004737  013254                        JSR     PC,CPYTRR               ;COPY TR79 REGISTERS,CLEAR EXPECTED RESULTS
1266  014264  012737  002632  002174                MOV     #2632,ETRCR             ;SPECIFY EXPECTED RESULT
1267  014272  012737  002021  002176                MOV     #2021,ETRSR             ;SPECIFY EXPECTED RESULT
1268  014300  023737  002174  002164                CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1269  014306  001401                                BEQ     10$                     ;OK
1270  014310  005202                                INC     R2                      ;INDICATE ERROR
1271  014312                                  10$:
1272  014312  023737  002176  002166                CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1273  014320  001401                                BEQ     20$                     ;OK
1274  014322  005202                                INC     R2                      ;INDICATE ERROR
1275  014324                                  20$:
1276  014324  005702                                TST     R2                      ;ANY ERRORS?
1277  014326  001415                                BEQ     30$                     ;NO
1278          000005                  ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1279  014330  012737  000003  002154                MOV     #T.ESFT,ERRTYP          ;SPECIFY 'SOFT' ERROR
1280  014336  012737  000005  002156                MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1281  014344  012737  022504  002160                MOV     #MWILPFL,ERRMSG         ;SPECIFY POINTER TO ERROR MESSAGE
1282  014352  012737  020064  002162                MOV     #ERR4,ERRBLK            ;SPECIFY POINTER TO ERROR HANDLER
1283  014360  000261                                SEC                             ;SET C = 1
1284  014362  000207                          30$:  RTS     PC                      ;RETURN
1285
1286
1287                                      ;*******************************************************************************
1288                                      .SBTTL  CHEKS   SUBROUTINE CHECKS DATA READ IN TEST4 AND TEST5
1289                                      ;*******************************************************************************
```

```
CZTRAC.P11    30-DEC-81 11:08          CHEKS   SUBROUTINE CHECKS DATA READ IN TEST4 AND TEST5

 1290
 1291                                          ;COMPARE DATA WRITTEN FROM OUTPUT AREA
 1292                                          ; WITH DATA READ INTO INPUT AREA
 1293                                          ;IF ALL COMPARES YIELD "EQUAL"
 1294                                          ;  THEN EXIT WITH C = 0
 1295                                          ;  ELSE RECORD ERROR AND EXIT WITH C = 1
 1296
 1297  014364  012701  006322          CHEKS:  MOV     #INPUT,R1               ;POINT TO DATA READ
 1298  014370  012702  002262                  MOV     #OUTPUT,R2              ;POINT TO DATA WRITTEN
 1299  014374  013703  002214                  MOV     USEB,R3                 ;COPY COUNT
 1300  014400  010137  002210          10$:    MOV     R1,LINPUT               ;SPECIFY INPUT LOCATION
 1301  014404  011137  002204                  MOV     @R1,AINPUT              ;COPY DATA READ
 1302  014410  011237  002206                  MOV     @R2,EINPUT              ;COPY DATA WRITTEN
 1303  014414  022122                          CMP     (R1)+,(R2)+             ;CHECK INPUT WITH OUTPUT
 1304  014416  001003                          BNE     20$                     ;ERROR
 1305  014420  005203                          INC     R3                      ;OK.INCREMENT WORD COUNT
 1306  014422  001366                          BNE     10$                     ;CHECK NEXT WORD OF DATA
 1307  014424  000416                          BR      30$                     ;ALL DONE. NO ERRORS
 1308  014426                          20$:
 1309          000006                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
 1310  014426  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY 'SOFT' ERROR
 1311  014434  012737  000006  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
 1312  014442  012737  022643  002160          MOV     #MRDERR,ERRMSG          ;SPECIFY POINTER TO ERROR MESSAGE
 1313  014450  012737  020202  002162          MOV     #ERR14,ERRBLK           ;SPECIFY POINTER TO ERROR HANDLER
 1314  014456  000261                          SEC                             ;SET C = 1
 1315  014460  000401                          BR      40$
 1316  014462                          30$:
 1317  014462  000241                          CLC                             ;SET C = 0
 1318  014464  000207                  40$:    RTS     PC                      ;RETURN
 1319
 1320
 1321                                          ;-------------------------------------------------------
 1322                                          .SBTTL  CHEKS1  SUBROUTINE CLEARS INPUT AREA
 1323                                          ;-------------------------------------------------------
```

```
 1324
 1325  014466                          CHEKS1:
 1326  014466  012701  006322                  MOV     #INPUT,R1               ;POINT TO INPUT AREA
 1327  014472  012702  177000                  MOV     #-1000,R2               ;SPECIFY COUNT FOR CLEAR INPUT
 1328  014476  005021                  10$:     CLR     (R1)+                   ;CLEAR INPUT WORD
 1329  014500  005202                          INC     R2                      ;COUNT
 1330  014502  001375                          BNE     10$                     ;CONTINUE CLEARING
 1331  014504  000207                          RTS     PC                      ;RETURN
 1332
 1333
 1334                                  ;-------------------------------------------------------------------------------
 1335                                  .SBTTL CHEKU  GLOBAL SUBROUTINE  CHECK REGISTERS AFTER SPACE REVERSE OVER EOF
 1336                                  ;-------------------------------------------------------------------------------
```

```
1337
1338  014506  004737  013354          CHEKU:  JSR     PC,RWWAIT               ;WAIT
1339  014512  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1340  014516  012737  003610  002174          MOV     #3610,ETRCR             ;EXPECTED
1341  014524  012737  002011  002176          MOV     #2011,ETRSR             ;EXPECTED
1342  014532  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1343  014540  001401                          BEQ     10$                     ;OK
1344  014542  005202                          INC     R2                      ;INDICATE ERROR
1345  014544                          10$:
1346  014544  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1347  014552  001401                          BEQ     20$                     ;OK
1348  014554  005202                          INC     R2                      ;INDICATE ERROR
1349  014556                          20$:
1350  014556  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
1351  014562  001401                          BEQ     30$                     ;OK
1352  014564  005202                          INC     R2                      ;INDICATE ERROR
1353  014566                          30$:
1354  014566  005737  002170                  TST     ATRWC                   ;TEST WORD COUNT
1355  014572  001401                          BEQ     40$                     ;OK
1356  014574  005202                          INC     R2                      ;INDICATE ERROR
1357  014576                          40$:
1358  014576  005702                          TST     R2                      ;ANY ERRORS?
1359  014600  001415                          BEQ     50$                     ;NO
1360          000007          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
1361  014602  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1362  014610  012737  000007  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1363  014616  012737  022665  002160          MOV     #MSREFFL,ERRMSG         ;SPECIFY ERROR MESSAGE
1364  014624  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1365  014632  000261                          SEC                             ;SET C = 1
1366  014634  000207                  50$:    RTS     PC                      ;RETURN
1367
1368
1369                                  ;-------------------------------------------------------------------------------
1370                                  .SBTTL  CHEKV   GLOBAL SUBROUTINE CHECK REGISTERS AFTER READING EOF(TAPE MARK)
1371                                  ;-------------------------------------------------------------------------------
```

```
1372
1373  014636  004737  013354          CHEKV:  JSR     PC,RWWAIT               ;WAIT
1374  014642  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1375  014646  012737  002204  002174          MOV     #2204,ETRCR             ;EXPECTED
1376  014654  012737  002011  002176          MOV     #2011,ETRSR             ;EXPECTED
1377  014662  012737  006322  002202          MOV     #INPUT,ETRBA            ;EXPECTED
1378  014670  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1379  014676  001401                          BEQ     10$                     ;OK
1380  014700  005202                          INC     R2                      ;INDICATE ERROR
1381  014702                          10$:
1382  014702  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1383  014710  001401                          BEQ     20$                     ;OK
1384  014712  005202                          INC     R2                      ;INDICATE ERROR
1385  014714                          20$:
1386  014714  023737  002202  002172          CMP     ETRBA,ATRBA             ;TEST BUFFER ADDRESS
1387  014722  001401                          BEQ     30$                     ;OK
1388  014724  005202                          INC     R2                      ;INDICATE ERROR
1389  014726                          30$:
1390  014726  005737  002170                  TST     ATRWC                   ;TEST WORD COUNT
1391  014732  001401                          BEQ     40$                     ;OK
1392  014734  005202                          INC     R2                      ;INDICATE ERROR
1393  014736                          40$:
1394  014736  005702                          TST     R2                      ;ANY ERRORS?
1395  014740  001415                          BEQ     50$                     ;NO
1396          000010          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1397  014742  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1398  014750  012737  000010  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1399  014756  012737  022726  002160          MOV     #MREFFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1400  014764  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1401  014772  000261                          SEC                             ;SET C = 1
1402  014774  000207                  50$:    RTS     PC                      ;RETURN
1403
1404
1405                                  ;-------------------------------------------------------------------------------
1406                                  .SBTTL CHEKAC GLOBAL SUBROUTINE CHEK REGISTERS AFTER READ WITH LONG WORD COUNT
1407                                  ;-------------------------------------------------------------------------------
```

```
1408
1409  014776  004737  013354          CHEKAC: JSR     PC,RWWAIT               ;WAIT
1410  015002  004737  013254                  JSR     PC,CPY1RR               ;COPY TR79 REGISTERS
1411  015006  012737  102204  002174          MOV     #102204,ETRCR           ;EXPECTED
1412  015014  012737  003001  002176          MOV     #3001,ETRSR             ;EXPECTED
1413  015022  012737  006520  002202          MOV     #INPUT+176,ETRBA        ;EXPECTED
1414  015030  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1415  015036  001401                          BEQ     10$                     ;OK
1416  015040  005202                          INC     R2                      ;INDICATE ERROR
1417  015042                          10$:
1418  015042  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1419  015050  001401                          BEQ     20$                     ;OK
1420  015052  005202                          INC     R2                      ;INDICATE ERROR
1421  015054                          20$:
1422  015054  023737  002202  002172          CMP     ETRBA,ATRBA     ;TEST BUFFER ADDRESS
1423  015062  001401                          BEQ     30$                     ;OK
1424  015064  005202                          INC     R2                      ;INDICATE ERROR
1425  015066                          30$:
1426  015066  005737  002170                  TST     ATRWC                   ;TEST THE WORD COUN.
1427  015072  001401                          BEQ     40$                     ;OK
1428  015074  005202                          INC     R2                      ;INDICATE ERROR
1429
1430  015076                          40$:
1431  015076  005702                          TST     R2                      ;ANY ERRORS?
1432  015100  001415                          BEQ     50$                     ;NO
1433          000011          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1434  015102  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1435  015110  012737  000011  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1436  015116  012737  023166  002160          MOV     #MRCFL,ERRMSG           ;SPECIFY ERROR MESSAGE
1437  015124  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1438  015132  000261                          SEC                             ;SET C = 1
1439  015134  004737  013324          50$:    JSR     PC,CPWR                 ;RESET TR79
1440  015140  000207                          RTS     PC                      ;RETURN
1441
1442
1443                                  ;-------------------------------------------------------------
1444                                  .SBTTL CHEKAD GLOBAL SUBROUTINE CHECKS REGISTER AFTER READ WITH SHORT COUNT
1445                                  ;-------------------------------------------------------------
```

```
1446
1447  015142  004737  013354          CHEKAD: JSR     PC,RWWAIT               ;WAIT
1448  015146  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1449  015152  012737  102204  002174          MOV     #102204,ETRCR           ;EXPECTED
1450  015160  012737  003001  002176          MOV     #3001,ETRSR             ;EXPECTED
1451  015166  012737  006522  002202          MOV     #INPUT+200,ETRBA        ;EXPECTED
1452  015174  012737  177777  002200          MOV     #-1,ETRWC               ;EXPECTED
1453  015202  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1454  015210  001401                          BEQ     10$                     ;OK
1455  015212  005202                          INC     R2                      ;INDICATE ERROR
1456  015214                          10$:
1457  015214  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1458  015222  001401                          BEQ     20$                     ;OK
1459  015224  005202                          INC     R2                      ;INDICATE ERROR
1460  015226                          20$:
1461  015226  023737  002202  002172          CMP     ETRBA,ATRBA     ;TEST BUFFER ADDRESS
1462  015234  001401                          BEQ     30$                     ;OK
1463  015236  005202                          INC     R2                      ;INDICATE ERROR
1464  015240                          30$:
1465  015240  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1466  015246  001401                          BEQ     40$                     ;OK
1467  015250  005202                          INC     R2                      ;INDICATE EPRCR
1468
1469  015252                          40$:
1470  015252  005702                          TST     R2                      ;ANY ERRORS?
1471  015254  001415                          BEQ     50$                     ;NO
1472          000012          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
1473  015256  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1474  015264  012737  000012  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1475  015272  012737  023166  002160          MOV     #MRCFL,ERRMSG           ;SPECIFY ERROR MESSAGE
1476  015300  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1477  015306  000261                          SEC                             ;SET C = 1
1478  015310  004737  013324          50$:    JSR     PC,CPWR                 ;RESET TR79
1479  015314  000207                          RTS     PC                      ;RETURN
1480
1481
1482                                  ;-------------------------------------------------------------------------------
1483                                  .SBTTL  CHEKAE  GLOBAL SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH SHORT COUNT
1484                                  ;-------------------------------------------------------------------------------
```

```
1485
1486  015316  004737  013354          CHEKAE: JSR     PC,RWWAIT               ;WAIT
1487  015322  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1488  015326  012737  003610  002174          MOV     #3610,ETRCR             ;EXPECTED
1489  015334  012737  002001  002176          MOV     #2001,ETRSR             ;EXPECTED
1490  015342  012737  177701  002200          MOV     #177701,ETRWC           ;EXPECTED
1491  015350  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1492  015356  001401                          BEQ     10$                     ;OK
1493  015360  005202                          INC     R2                      ;INDICATE ERROR
1494  015362                          10$:
1495  015362  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1496  015370  001401                          BEQ     20$                     ;OK
1497  015372  005202                          INC     R2                      ;INDICATE ERROR
1498  015374                          20$:
1499  015374  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
1500  015400  001401                          BEQ     30$                     ;OK
1501  015402  005202                          INC     R2                      ;INDICATE ERROR
1502  015404                          30$:
1503  015404  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1504  015412  001401                          BEQ     40$                     ;OK
1505  015414  005202                          INC     R2                      ;INDICATE ERROR
1506  015416                          40$:
1507  015416  005702                          TST     R2                      ;ANY ERRORS?
1508  015420  001415                          BEQ     50$                     ;NO
1509          000013          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1510  015422  012737  000C03  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1511  015430  012737  000013  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1512  015436  012737  023166  002160          MOV     #MRCFL,ERRMSG           ;SPECIFY ERROR MESSAGE
1513  015444  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1514  015452  000261                          SEC                             ;SET C = 1
1515  015454  004737  013324          50$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
1516  015460  000207                          RTS     PC                      ;RETURN
1517
1518
1519                                  ;-------------------------------------------------------------------
1520                                  .SBTTL CHEKAF SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH LONG COUNT
1521                                  ;-------------------------------------------------------------------
```

```
CZTRAC.P11    30-DEC-81 11:08          CHEKAF SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH LONG COUNT

 1522
 1523  015462  004737  013354          CHEKAF: JSR     PC,RWWAIT               ;WAIT
 1524  015466  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 1525  015472  012737  003610  002174          MOV     #3610,ETRCR             ;EXPECTED
 1526  015500  012737  002001  002176          MOV     #2001,ETRSR             ;EXPECTED
 1527  015506  012737  177677  002200          MOV     #177677,ETRWC           ;EXPECTED
 1528  015514  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 1529  015522  001401                          BEQ     10$                     ;OK
 1530  015524  005202                          INC     R2                      ;INDICATE ERROR
 1531  015526                          10$:
 1532  015526  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 1533  015534  001401                          BEQ     20$                     ;OK
 1534  015536  005202                          INC     R2                      ;INDICATE ERROR
 1535  015540                          20$:
 1536  015540  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
 1537  015544  001401                          BEQ     30$                     ;OK
 1538  015546  005202                          INC     R2                      ;INDICATE ERROR
 1539  015550                          30$:
 1540  015550  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
 1541  015556  001401                          BEQ     40$                     ;OK
 1542  015560  005202                          INC     R2                      ;INDICATE ERROR
 1543  015562                          40$:
 1544  015562  005702                          TST     R2                      ;ANY ERRORS?
 1545  015564  001415                          BEQ     50$                     ;NO
 1546          000014          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
 1547  015566  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
 1548  015574  012737  000014  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
 1549  015602  012737  023166  002160          MOV     #MRCFL,ERRMSG           ;SPECIFY ERROR MESSAGE
 1550  015610  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
 1551  015616  000261                          SEC                             ;SET C = 1
 1552  015620  004737  013324          50$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
 1553  015624  000207                          RTS     PC                      ;RETURN
 1554
 1555
 1556                                  ;-------------------------------------------------------------
 1557                                  .SBTTL CHEKAG  CHECK REGISTERS AFTER FAST FORWARD TO EOT
 1558                                  ;-------------------------------------------------------------
```

```
1559
1560  015626                                  CHEKAG:
1561  015626  004737  013354                  10$:    JSR     PC,RWWAIT               ;WAIT
1562  015632  005777  164404                          TST     @TRCR                   ;IF ERROR INDICATED
1563  015636  100407                                  BMI     15$                     ;  THEN RECORD TR79 REGISTERS
1564  015640  032777  002000  164374                  BIT     #MTRDY,@TRCR            ;IF NOT MTRDY
1565  015646  001403                                  BEQ     15$                     ;  THEN RECORD TR79 REGISTERS
1566  015650  105777  164366                          TSTB    @TRCR                   ;IF NOT CURDY
1567  015654  100366                                  BPL     10$                     ;THEN KEEP CHECKING
1568  015656  004737  013254                  15$:    JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1569  015662  012737  003226  002174                  MOV     #3226,ETRCR             ;EXPECTED
1570  015670  012737  002201  002176                  MOV     #2201,ETRSR             ;EXPECTED
1571  015676  023737  002174  002164                  CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1572  015704  001401                                  BEQ     20$                     ;OK
1573  015706  005202                                  INC     R2                      ;INDICATE ERROR
1574  015710                                  20$:
1575  015710  023737  002176  002166                  CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1576  015716  001401                                  BEQ     30$                     ;OK
1577  015720  005202                                  INC     R2                      ;INDICATE ERROR
1578  015722                                  30$:
1579  015722  005737  002172                          TST     ATRBA                   ;TEST BUFFER ADDRESS
1580  015726  001401                                  BEQ     40$                     ;OK
1581  015730  005202                                  INC     R2                      ;INDICATE ERROR
1582  015732                                  40$:
1583  015732  005737  002170                          TST     ATRWC                   ;TEST THE WORD COUNT
1584  015736  001401                                  BEQ     50$                     ;OK
1585  015740  005202                                  INC     R2                      ;INDICATE ERROR
1586  015742                                  50$:
1587  015742  005702                                  TST     R2                      ;ANY ERRORS?
1588  015744  001415                                  BEQ     60$                     ;NO
1589          000015                          ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
1590  015746  012737  000003  002154                  MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1591  015754  012737  000015  002156                  MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1592  015762  012737  023203  002160                  MOV     #METFL,ERRMSG           ;SPECIFY ERROR MESSAGE
1593  015770  012737  020102  002162                  MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1594  015776  000261                                  SEC                             ;SET C = 1
1595  016000  000207                          60$:    RTS     PC                      ;RETURN
1596
1597
1598                                          ;*******************************************************************
1599                                          .SBTTL  CHKAG1 SUBROUTINE CHECKS REGISTERS AFTER WRITE BEYOND EOT
1600                                          ;*******************************************************************
```

CZTRAC.P11 30-DEC-81 11:08 CHKAG1 SUBROUTINE CHECKS REGISTERS AFTER WRITE BEYOND EOT

```
1601
1602  016002  004737  013354          CHKAG1: JSR     PC,RWWAIT               ;WAIT
1603  016006  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1604  016012  012737  002602  002174          MOV     #2602,ETRCR             ;EXPECTED
1605  016020  012737  002201  002176          MOV     #2201,ETRSR             ;EXPECTED
1606  016026  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1607  016034  001401                          BEQ     60$                     ;OK
1608  016036  005202                          INC     R2                      ;INDICATE ERROR
1609  016040                          60$:
1610  016040  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1611  016046  001401                          BEQ     70$                     ;OK
1612  016050  005202                          INC     R2                      ;INDICATE ERROR
1613  016052                          70$:
1614  016052  005737  002170                  TST     ATRWC                   ;TEST THE WORD COUNT
1615  016056  001401                          BEQ     80$                     ;OK
1616  016060  005202                          INC     R2                      ;INDICATE ERROR
1617  016062                          80$:
1618  016062  005702                          TST     R2                      ;ANY ERRORS
1619  016064  001415                          BEQ     90$                     ;NO
1620          000016          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1621  016066  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY ERROR TYPE
1622  016074  012737  000016  002156          MOV     #ENUM,ERRNBR            ;ERROR NUMBER
1623  016102  012737  023301  002160          MOV     #MWPETFL,ERRMSG         ;ERROR MESSAGE
1624  016110  012737  020120  002162          MOV     #ERR6,ERRBLK            ;ERROR HANDLER
1625  016116  000261                          SEC                             ;SET C = 1
1626  016120  000207                  90$:    RTS     PC
1627
1628
1629                                  ;-------------------------------------------------------------------------
1630                                  .SBTTL CHEKAV SUBROUTINE CHECKS REGISTERS AFTER SPACE REVERSE OVER ID BLOCK
1631                                  ;-------------------------------------------------------------------------
```

```
1632
1633  016122  004737  013354          CHEKAV: JSR     PC,RWWAIT               ;WAIT
1634  016126  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1635  016132  012737  003610  002174          MOV     #3610,ETRCR             ;EXPECTED
1636  016140  012737  002061  002176          MOV     #2061,ETRSR             ;EXPECTED
1637  016146  013737  002214  002200          MOV     USEB,ETRWC              ;EXPECTED
1638  016154  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1639  016162  001401                          BEQ     10$                     ;OK
1640  016164  005202                          INC     R2                      ;INDICATE ERROR
1641  016166                          10$:
1642  016166  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1643  016174  001401                          BEQ     20$                     ;OK
1644  016176  005202                          INC     R2                      ;INDICATE ERROR
1645  016200                          20$:
1646  016200  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
1647  016204  001401                          BEQ     30$                     ;OK
1648  016206  005202                          INC     R2                      ;INDICATE ERROR
1649  016210                          30$:
1650  016210  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1651  016216  001401                          BEQ     40$                     ;OK
1652  016220  005202                          INC     R2                      ;INDICATE ERROR
1653  016222                          40$:
1654  016222  005702                          TST     R2                      ;ANY ERRORS?
1655  016224  001415                          BEQ     50$                     ;NO
1656          000017          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
1657  016226  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1658  016234  012737  000017  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1659  016242  012737  023620  002160          MOV     #MSRIFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1660  016250  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1661  016256  000261                          SEC                             ;SET C = 1
1662  016260  000207                  50$:    RTS     PC                      ;RETURN
1663
1664                                  ;*******************************************************************
1665                                  .SBTTL CHEKAW SUBROUTINE CHECKS REGISTERS AFTER READING AN ID BLOCK
1666                                  ;*******************************************************************
```

CZTRAC.P11 30-DEC-81 11:08 CHEKAW SUBROUTINE CHECKS REGISTERS AFTER READING AN ID BLOCK

```
1667
1668  016262  004737  013354          CHEKAW: JSR     PC,RWWAIT               ;WAIT
1669  016266  004737  013254                  JSR     PC,CPYTRR               ;COPY TK79 REGISTERS
1670  016272  012737  002204  002174          MOV     #2204,ETRCR             ;EXPECTED
1671  016300  012737  002021  002176          MOV     #2021,ETRSR             ;EXPECTED
1672  016306  012737  006322  002202          MOV     #INPUT,ETRBA            ;EXPECTED
1673  016314  013737  002214  002200          MOV     USEB,ETRWC              ;EXPECTED
1674  016322  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1675  016330  001401                          BEQ     10$                     ;OK
1676  016332  005202                          INC     R2                      ;INDICATE ERROR
1677  016334                          10$:
1678  016334  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1679  016342  001401                          BEQ     20$                     ;OK
1680  016344  005202                          INC     R2                      ;INDICATE ERROR
1681  016346                          20$:
1682  016346  023737  002202  002172          CMP     ETRBA,ATRBA             ;TEST BUFFER ADDRESS
1683  016354  001401                          BEQ     30$                     ;OK
1684  016356  005202                          INC     R2                      ;INDICATE ERROR
1685  016360                          30$:
1686  016360  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1687  016366  001401                          BEQ     40$                     ;OK
1688  016370  005202                          INC     R2                      ;INDICATE ERROR
1689  016372                          40$:
1690  016372  005037  002206                  CLR     EINPUT                  ;CLEAR WORD FOR EXPECTED VALUE
1691  016376  005037  002204                  CLR     AINPUT                  ;CLEAR WORD FOR ACTUAL VALUE
1692  016402  005737  006322                  TST     INPUT                   ;TEST INPUT AREA
1693  016406  001404                          BEQ     50$                     ;OK
1694  016410  013737  006322  002204          MOV     INPUT,AINPUT            ;ACTUAL
1695  016416  005202                          INC     R2                      ;INDICATE ERROR
1696  016420                          50$:
1697  016420  005702                          TST     R2                      ;ANY ERRORS?
1698  016422  001415                          BEQ     60$                     ;NO
1699          000020          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1700  016424  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1701  016432  012737  000020  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1702  016440  012737  023654  002160          MOV     #MRIBFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1703  016446  012737  020244  002162          MOV     #ERR15,ERRBLK           ;SPECIFY ERROR HANDLER
1704  016454  000261                          SEC                             ;SET C = 1
1705  016456  000207                  60$:    RTS     PC                      ;RETURN
1706
1707
1708                                  ;-------------------------------------------------------------------------
1709                                  .SBTTL  CHEKAX SUBROUTINE CHECKS REGISTERS AFTER WRITE DATA WITH EVEN PARITY
1710                                  ;-------------------------------------------------------------------------
```

```
1711
1712  016460  004737  013354          CHEKAX: JSR     PC,RWWAIT               ;WAIT
1713  016464  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1714  016470  012737  102602  002174          MOV     #102602,ETRCR           ;EXPECTED
1715  016476  012737  162001  002176          MOV     #162001,ETRSR           ;EXPECTED
1716  016504  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1717  016512  001401                          BEQ     10$                     ;OK
1718  016514  005202                          INC     R2                      ;INDICATE ERROR
1719  016516                          10$:
1720  016516  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1721  016524  001401                          BEQ     20$                     ;OK
1722  016526  005202                          INC     R2                      ;INDICATE ERROR
1723  016530                          20$:
1724  016530  013701  002214                  MOV     USEB,R1                 ;GET WORD COUNT
1725  016534  005101                          COM     R1                      ;FIX IT
1726  016536  005201                          INC     R1                      ;INCREMENT IT
1727  016540  006301                          ASL     R1                      ;DOUBLE IT
1728  016542  062701  002256                  ADD     #BADOUT,R1              ;FINISH IT
1729  016546  010137  002202                  MOV     R1,ETRBA                ;EXPECTED
1730  016552  020137  002172                  CMP     R1,ATRBA                ;TEST BUFFER ADDRESS
1731  016556  001401                          BEQ     30$                     ;OK
1732  016560  005202                          INC     R2                      ;INDICATE ERROR
1733  016562                          30$:
1734  016562  005737  002170                  TST     ATRWC                   ;TEST THE WORD COUNT
1735  016566  001401                          BEQ     40$                     ;OK
1736  016570  005202                          INC     R2                      ;INDICATE ERROR
1737  016572                          40$:
1738  016572  005702                          TST     R2                      ;ANY ERRORS?
1739  016574  001415                          BEQ     50$                     ;NO
1740          000021          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1741  016576  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1742  016604  012737  000021  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1743  016612  012737  023674  002160          MOV     #MPARFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1744  016620  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1745  016626  000261                          SEC                             ;SET C = 1
1746  016630  004737  013324          50$:    JSR     PC,CPWR                 ;RESET TR79
1747  016634  000207                          RTS     PC                      ;RETURN
1748
1749
1750                                  ;-------------------------------------------------------------------------
1751                                  .SBTTL CHEKAY SUBROUTINE CHECKS REGISTERS AFTERREVERSE OVER EVEN PARITY DATA
1752                                  ;-------------------------------------------------------------------------
```

```
1753
1754  016636  004737  013354          CHEKAY: JSR     PC,RWWAIT               ;WAIT
1755  016642  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1756  016646  012737  103610  002174          MOV     #103610,ETRCR           ;EXPECTED
1757  016654  012737  122001  002176          MOV     #122001,ETRSR           ;EXPECTED
1758  016662  012737  177700  002200          MOV     #177700,ETRWC           ;EXPECTED
1759  016670  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1760  016676  001401                          BEQ     10$                     ;OK
1761  016700  005202                          INC     R2                      ;INDICATE ERROR
1762  016702                          10$:
1763  016702  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1764  016710  001401                          BEQ     20$                     ;OK
1765  016712  005202                          INC     R2                      ;INDICATE ERROR
1766  016714                          20$:
1767  016714  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
1768  016720  001401                          BEQ     30$.                    ;OK
1769  016722  005202                          INC     R2                      ;INDICATE ERROR
1770  016724                          30$:
1771  016724  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1772  016732  001401                          BEQ     40$                     ;OK
1773  016734  005202                          INC     R2                      ;INDICATE ERROR
1774  016736                          40$:
1775  016736  005702                          TST     R2                      ;ANY ERRORS?
1776  016740  001415                          BEQ     50$                     ;NO
1777          000022          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
1778  016742  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1779  016750  012737  000022  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1780  016756  012737  023712  002160          MOV     #MEPSRFL,ERRMSG         ;SPECIFY ERROR MESSAGE
1781  016764  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1782  016772  000261                          SEC                             ;SET C = 1
1783  016774  004737  013324          50$:    JSR     PC,CPWR                 ;RESET TR79
1784  017000  000207                          RTS     PC                      ;RETURN
1785
1786
1787                                  .SBTTL  CHEKAZ SUBROUTINE CHECK REGISTERS AFTER READING EVEN PARITY DATA
1788                                  ;-----------------------------------------------------------------------
```

```
1789
1790  017002
1791  017002  004737  013354          CHEKAZ:
1792  017006  004737  013254                  JSR     PC,RWWAIT               ;WAIT
1793  017012  012737  102204  002174          JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1794  017020  012737  163001  002176          MOV     #102204,ETRCR           ;EXPECTED
1795  017026  012737  006324  002202          MOV     #163001,ETRSR           ;EXPECTED
1796  017034  012737  177701  002200          MOV     #INPUT+2,ETRBA          ;EXPECTED
1797  017042  023737  002174  002164          MOV     #177701,ETRWC           ;EXPECTED
1798  017050  001401                          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1799  017052  005202                          BEQ     10$                     ;OK
1800  017054                                  INC     R2                      ;INDICATE ERROR
1801  017054  023737  002176  002166  10$:    CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1802  017062  001401                          BEQ     20$                     ;OK
1803  017064  005202                          INC     R2                      ;INDICATE ERROR
1804  017066
1805  017066  023737  002202  002172  20$:    CMP     ETRBA ATRBA             ;TEST BUFFER ADDRESS
1806  017074  001401                          BEQ     30$                     ;OK
1807  017076  005202                          INC     R2                      ;INDICATE ERROR
1808  017100
1809  017100  023737  002200  002170  30$:    CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
1810  017106  001401                          BEQ     40$                     ;OK
1811  017110  005202                          INC     R2                      ;INDICATE ERROR
1812  017112
1813  017112  005702                  40$:    TST     R2                      ;ANY ERRORS?
1814  017114  001415                          BEQ     50$                     ;NO
1815          000023          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
1816  017116  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1817  017124  012737  000023  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1818  017132  012737  023746  002160          MOV     #MREPFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1819  017140  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
1820  017146  000261                          SEC                             ;SET C = 1
1821  017150  004737  013324          50$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
1822  017154  000207                          RTS     PC                      ;RETURN
1823
1824
1825                                  .SBTTL  CHEKCX  SUBROUTINE CHECKS TR79 REGISTERS AFTER WRITE
1826                                  ;-----------------------------------------------------------------*
```

```
1827
1828
1829  017156  004737  013354          CHEKCX: JSR     PC,RWWAIT               ;WAIT
1830  017162  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
1831  017166  012737  002602  002174          MOV     #2602,ETRCR             ;EXPECTED
1832  017174  012737  002001  002176          MOV     #2001,ETRSR             ;EXPECTED
1833  017202  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1834  017210  001401                          BEQ     10$                     ;OK
1835  017212  005202                          INC     R2                      ;INDICATE ERROR
1836  017214                          10$:
1837  017214  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1838  017222  001401                          BEQ     20$                     ;OK
1839  017224  005202                          INC     R2                      ;INDICATE ERROR
1840  017226                          20$:
1841  017226  005737  002170                  TST     ATRWC                   ;TEST WORD COUNT
1842  017232  001401                          BEQ     30$                     ;OK
1843  017234  005202                          INC     R2                      ;INDICATE ERROR
1844  017236                          30$:
1845  017236  005702                          TST     R2                      ;ANY ERRORS?
1846  017240  001415                          BEQ     40$                     ;NO
1847          000024                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
1848  017242  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1849  017250  012737  000024  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1850  017256  012737  021755  002160          MOV     #MWRTFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1851  017264  012737  020120  002162          MOV     #ERR6,ERRBLK            ;SPECIFY ERROR HANDLER
1852  017272  000261                          SEC                             ;SET C = 1
1853  017274  000207                  40$:    RTS     PC                      ;RETURN
1854
1855
1856                                  .SBTTL  CHEKDX SUBROUTINE CHECKS TR79 REGISTERS AFTER READ
1857                                  ;----------------------------------------------------------------------*
```

```
CZTRAC.P11    30-DEC-81 11:08          CHEKDX SUBROUTINE CHECKS TR79 REGISTERS AFTER READ

 1858
 1859  017276  004737  013354          CHEKDX: JSR     PC,RWWAIT               ;WAIT
 1860  017302  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 1861  017306  012737  002204  002174          MOV     #2204,ETRCR             ;EXPECTED
 1862  017314  012737  002001  002176          MOV     #2001,ETRSR             ;EXPECTED
 1863  017322  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 1864  017330  001401                          BEQ     10$                     ;OK
 1865  017332  005202                          INC     R2                      ;INDICATE ERROR
 1866  017334                          10$:
 1867  017334  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 1868  017342  001401                          BEQ     20$                     ;OK
 1869  017344  005202                          INC     R2                      ;INDICATE ERROR
 1870  017346                          20$:
 1871  017346  005737  002170                  TST     ATRWC                   ;TEST WORD COUNT
 1872  017352  001401                          BEQ     30$                     ;OK
 1873  017354  005202                          INC     R2                      ;INDICATE ERROR
 1874  017356                          30$:
 1875  017356  005702                          TST     R2                      ;ANY ERRORS?
 1876  017360  001415                          BEQ     40$                     ;NO
 1877          000025                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
 1878  017362  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
 1879  017370  012737  000025  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
 1880  017376  012737  021765  002160          MOV     #MRDFL,ERRMSG           ;SPECIFY ERROR MESSAGE
 1881  017404  012737  020120  002162          MOV     #ERR6,ERRBLK            ;SPECIFY ERROR HANDLER
 1882  017412  000261                          SEC                             ;SET C = 1
 1883  017414  000207                  40$:    RTS     PC                      ;RETURN
 1884
 1885
 1886                                  .SBTTL  CHEKEX SUBROUTINE CHECKS TR79 REGISTERS AFTER SPACE REVERSE
 1887                                  ;---------------------------------------------------------------
```

```
1888
1889
1890  017416  004737  013354          CHEKEX: JSR     PC,RWWAIT               ;WAIT
1891  017422  004737  013254                  JSR     PC,CPYTRR               ;COPU TR79 REGISTERS
1892  017426  012737  003610  002174          MOV     #3610,ETRCR             ;EXPECTED
1893  017434  012737  002001  002176          MOV     #2001,ETRSR             ;EXPECTED
1894  017442  013737  002214  002200          MOV     USEB,ETRWC              ;EXPECTED
1895  017450  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
1896  017456  001401                          BEQ     10$                     ;OK
1897  017460  005202                          INC     R2                      ;INDICATED
1898  017462                          10$:
1899  017462  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
1900  017470  001401                          BEQ     20$                     ;OK
1901  017472  005202                          INC     R2                      ;INDICATE ERROR
1902  017474                          20$:
1903  017474  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST WORD COUNT
1904  017502  001401                          BEQ     30$                     ;OK
1905  017504  005202                          INC     R2                      ;INDICATE ERROR
1906  017506                          30$:
1907  017506  005702                          TST     R2                      ;ANY ERRORS?
1908  017510  001415                          BEQ     40$                     ;NO
1909          000026                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
1910  017512  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
1911  017520  012737  000026  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
1912  017526  012737  021774  002160          MOV     #MSRVFL,ERRMSG          ;SPECIFY ERROR MESSAGE
1913  017534  012737  020120  002162          MOV     #ERR6,ERRBLK            ;SPECIFY ERROR HANDLER
1914  017542  000261                          SEC                             ;SET C = 1
1915  017544  000207                  40$:    RTS     PC                      ;RETURN
1916
1917
1918                                  ;*******************************************************************
1919                                  .SBTTL  CHEKFX GLOBAL SUBROUTINE --TEST TR79 REGISTERS AFTER ERASE--
1920                                  ;*******************************************************************
```

```
 1921
 1922  017546  004737  013354          CHEKFX: JSR     PC,RWWAIT               ;WAIT
 1923  017552  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS,CLEAR EXPECTED RESULT
 1924  017556  012737  002216  002174          MOV     #2216,ETRCR             ;SPECIFY EXPECTED RESULT
 1925  017564  012737  002001  002176          MOV     #2001,ETRSR             ;SPECIFY EXPECTED RESULT
 1926  017572  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 1927  017600  001401                          BEQ     10$                     ;OK
 1928  017602  005202                          INC     R2                      ;INDICATE ERROR
 1929  017604                          10$:
 1930  017604  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 1931  017612  001401                          BEQ     20$                     ;OK
 1932  017614  005202                          INC     R2                      ;INDICATE ERROR
 1933  017616                          20$:
 1934  017616  013701  002214                  MOV     USEB,R1                 ;GET WORD COUNT
 1935  017622  005101                          COM     R1                      ;FIX IT
 1936  017624  005201                          INC     R1
 1937  017626  006301                          ASL     R1                      ;DOUBLE IT
 1938  017630  062701  002262                  ADD     #OUTPUT,R1              ;COMPUTE BUS ADDRESS
 1939  017634  010137  002202                  MOV     R1,ETRBA                ;SPECIFY EXPECTED RESULT
 1940  017640  020137  002172                  CMP     R1,ATRBA                ;TEST BUFFER ADDRESS
 1941  017644  001401                          BEQ     30$                     ;OK
 1942  017646  005202                          INC     R2                      ;INDICATE ERROR
 1943  017650                          30$:
 1944  017650  005737  002170                  TST     ATRWC                   ;TEST THE WORD COUNT
 1945  017654  001401                          BEQ     40$                     ;OK
 1946  017656  005202                          INC     R2                      ;INDICATE ERROR
 1947  017660                          40$:
 1948  017660  005702                          TST     R2                      ;ANY ERRORS?
 1949  017662  001415                          BEQ     50$                     ;NO
 1950          000027          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
 1951  017664  012737  000003  002154          MOV     #T.ESFT,ERRTYP          ;SPECIFY SOFT ERROR
 1952  017672  012737  000027  002156          MOV     #ENUM,ERRNBR            ;SPECIFY ERROR NUMBER
 1953  017700  012737  022014  002160          MOV     #MERFL,ERRMSG           ;SPECIFY ERROR MESSAGE
 1954  017706  012737  020102  002162          MOV     #ERR5,ERRBLK            ;SPECIFY ERROR HANDLER
 1955  017714  000261                          SEC                             ;SET C = 1
 1956  017716  000207                  50$:    RTS     PC
 1957
 1958
 1959
 1960                                  ;
 1961                                  ;SBTTL "INTIN    GLOBAL SUBROUTINE TR79 INTERRUPT HANDLER"
 1962                                  ;
 1963                                  ;-----------------------------------------------------------------------
```

```
CZTRAC.P11    30-DEC-81 11:08          INTIN   GLOBAL SUBROUTINE--TR79 INTERRUPT HANDLER--

 1964
 1965                                          ;*************************************************************
 1966                                          ;CLEAR TR79 INTERRUPT ENABLE BIT                            *
 1967                                          ;CLEAR TR79 INTERRUPT INDICATOR (INTFLG)                    *
 1968                                          ;*************************************************************
 1969
 1970
 1971  017720                                  BGNSRV  INTIN
 1972  017720                          INTIN::
 1973  017720  042777  000100  162314         BIC     #100,@TRCR      ;DISABLE INTERRUPT
 1974  017726  005037  002240                 CLR     INTFLG          ;CLEAR THE FLAG
 1975  017732  000240                         NOP
 1976  017734                                  ENDSRV
 1977  017734                          L10002:
 1978  017734  000002                         RTI
 1979
 1980                                          ;-------------------------------------------------------------
 1981                                          .SBTTL  ERRORS    GLOBAL ERROR REPORTS
 1982                                          ;-------------------------------------------------------------
```

```
                                ;////////////////////////////////////////////////////////////////////////
                                ;/    THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
                                ;/    THAT ARE USED IN MORE THAN ONE TEST.
                                ;////////////////////////////////////////////////////////////////////////
                                        .EVEN


                                        ;-------------------------------------------------------
                                        .SBTTL  ERROR HANDLER --ERR1 -- 'NO NOTHING'' HANDLER
                                        ;-------------------------------------------------------
                                        BGNMSG  ERR1
                                ERR1::
017736  004737  020432          ER1:    JSR     PC,NULERR       ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
                                        ENDMSG
                                L10003:
017742  104423                          TRAP    C$MSG

                                        ;-------------------------------------------------------------------------
                                                .SBTTL  ERROR HANDLER --ERR2 -- INSTALL WRITE ENABLE RING
                                        ;-------------------------------------------------------------------------

                                ;       IF WRITE ENABLE RING IS PRESENT THEN EXIT
                                ;       ASK OPERATOR TO INSTALL RING
                                ;       WHILE RING NOT PRESENT KEEP CHECKING
                                ;       IF RING IS PRESENT THEN EXIT

                                        BGNMSG  ERR2
                                ERR2::
017744  004737  013446          ER2:    JSR     PC,TESTC                ;MAKE SURE RING IS INSTALLED
017750  000401                          BR      ER3                     ;MAKE SURE ON LINE AND READY
                                        ENDMSG
                                L10004:
017752  104423                          TRAP    C$MSG


                                ;-------------------------------------------------
                                .SBTTL  ERROR HANDLER --ERR3 -- TR79 NOT ON LINE OR NOT READY
                                ;-------------------------------------------------


                                        BGNMSG  ERR3
                                ERR3::
                                ER3:
017754  004737  014166          10$:    JSR     PC,TESTNN               ;MAKE SURE ON LINE
017760  103012                          BCC     20$                     ;OK. ON LINE WITH NO ERROR
017762                                  PRINTB  #FMTTXT,#M2A1           ;  ELSE SEND ERROR MESSAGE
017762  012746  021140                  MOV     #M2A1,-(SP)
017766  012746  020473                  MOV     #FMTTXT,-(SP)
017772  012746  000002                  MOV     #2,-(SP)
017776  010600                          MOV     SP,R0
020000  104414                          TRAP    C$PNTB
020002  062706  000006                  ADD     #6,SP
020006  004737  013354          20$:    JSR     PC,RWWAIT               ;WAIT A BIT
020012  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
```

```
CZTRAC.P11    30-DEC-81 11:08          ERROR HANDLER --ERR3 -- TR79 NOT ON LINE OR NOT READY

 2039
 2040  020016  004737  014114                        ;TEST READY
 2041  020022  103015                JSR     PC,TSTRDY               ;TEST READY BITS
 2042  020024                        BCC     30$                     ;READY. RETURN
 2043  020024  012746  021040        PRINTB  #FMTTXT,#EM2A           ;PRINT ERROR MESSAGE
 2044  020030  012746  020473        MOV     #EM2A,-(SP)
 2045  020034  012746  000002        MOV     #FMTTXT,-(SP)
 2046  020040  010600                MOV     #2,-(SP)
 2047  020042  104414                MOV     SP,R0
 2048  020044  062706  000006        TRAP    C$PNTB
 2049  020050  004737  013442        ADD     #6,SP
 2050  020054  000737                JSR     PC,CHKBRK               ;CHECK FOR OPERATOR INTERRUPT
 2051  020056                        BR      10$                     ;REPEAT TEST ON LINE AND READY
                                30$:
 2052  020056  004737  020432        JSR     PC,NULERR               ;TERMINATE ERROR MESSAGE
 2053  020062                        ENDMSG
 2054  020062                    L10005:
 2055  020062  104423                TRAP    C$MSG
 2056
 2057                               ;------------------------------------------------------------------------
 2058                               .SBTTL  ERROR HANDLER --ERR4-- PRINT COMMAND AND STATUS RESULTS
 2059                               ;------------------------------------------------------------------------
 2060
```

```
2061
2062
2063  020064
2064  020064
2065  020064  012702  000004
2066  020070  004737  020324
2067  020074  004737  020432
2068  020100
2069  020100
2070  020100  104423
2071
2072
2073
2074
2075
2076
2077
2078  020102
2079  020102
2080  020102  012702  000010
2081  020106  004737  020324
2082  020112  004737  020432
2083  020116
2084  020116
2085  020116  104423
2086
2087
2088
2089
2090
2091
2092
2093  020120
2094  020120
2095  020120  012702  000006
2096  020124  004737  020324
2097  020130  004737  020432
2098  020134
2099  020134
2100  020134  104423
2101
2102
2103
2104
2105
2106
```

```
ERROR HANDLER --ERR4-- PRINT COMMAND AND STATUS RESULTS

                ;PRINT TRCR AND TRSR RESULTS

        BGNMSG  ERR4
ERR4::
        MOV     #4,R2           ;SPECIFY REGISTER COUNT = 2 FOR PRINT
        JSR     PC,PRTREG       ;PRINT RESULTS
        JSR     PC,NULERR       ;TERMINATE ERROR MESSAGE
        ENDMSG
L10006:
        TRAP    C$MSG


        ;-------------------------------------------------------------
        .SBTTL  ERROR HANDLER --ERR5-- PRINT TR79 REGISTER RESULTS
        ;-------------------------------------------------------------

                        ;PRINT TRCR,TRSR,TRWC,TRBA RESULTS
        BGNMSG  ERR5
ERR5::
        MOV     #10,R2          ;SPECIFY REGISTER COUNT = 4 FOR PRINT
        JSR     PC,PRTREG       ;PRINT RESULTS
        JSR     PC,NULERR       ;TERMINATE ERROR MESSAGE
        ENDMSG
L10007:
        TRAP    C$MSG


        ;-------------------------------------------------------------
        .SBTTL  ERROR HANDLER --ERR6-- PRINT TR79 REGISTER RESULTS
        ;-------------------------------------------------------------

                        ;PRINT TRCR,TRSR,TRWC, RESULTS
        BGNMSG  ERR6
ERR6::
        MOV     #6,R2           ;SPECIFY REGISTER COUNT = 3 FOR PRINT
        JSR     PC,PRTREG       ;PRINT RESULTS
        JSR     PC,NULERR       ;TERMINATE ERROR MESSAGE
        ENDMSG
L10010:
        TRAP    C$MSG


        ;-------------------------------------------------------------------
        .SBTTL  ERROR HANDLER --ERR11-- FAILED TO LOAD VALUE INTO BUS ADDRESS REGISTER
        ;-------------------------------------------------------------------
```

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```
2107  020136
2108  020136
2109  020136  004737  020346          BGNMSG  ERR11
2110  020142  012701  000006  ERR11::
2111  020146  004737  020370          JSR     PC,XHDR         ;PRINT EXPECTED RESULT HEADER
2112  020152  004737  020432          MOV     #6,R1           ;SPECIFY BUS ADDRESSS REGISTER
2113  020156                          JSR     PC,XPRT         ;PRINT EXPECTED RESULT
2114  020156                          JSR     PC,NULERR       ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
2115  020156  104423                  ENDMSG
2116                          L10011:
2117                                  TRAP    C$MSG
2118
2119                                  ;-------------------------------------------------------
2120                                  .SBTTL  ERROR HANDLER --ERR12-- FAILED TO LOAD VALUE INTO WORD COUNT REGISTER
2121  020160                          ;-------------------------------------------------------
2122  020160
2123  020160  004737  020346          BGNMSG  ERR12
2124  020164  012701  000004  ERR12::
2125  020170  004737  020370          JSR     PC,XHDR         ;PRINT EXPECTED RESULT HEADER
2126  020174  004737  020432          MOV     #4,R1           ;SPECIFY TRWC REGISTER
2127  020200                          JSR     PC,XPRT         ;PRINT EXPECTED RESULT
2128  020200                          JSR     PC,NULERR       ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
2129  020200  104423                  ENDMSG
2130                          L10012:
2131                                  TRAP    C$MSG
2132
2133                                  ;-------------------------------------------------------
                                      .SBTTL  ERROR HANDLER --ERR14-- DATA ERROR ON READ
                                      ;-------------------------------------------------------
```

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```
2134  020202
2135  020202
2136  020202
2137  020202  013746  002206
2138  020206  013746  002204
2139  020212  013746  002210
2140  020216  012746  020500
2141  020222  012746  000004
2142  020226  010600
2143  020230  104414
2144  020232  062706  000012
2145  020236  004737  020432
2146  020242
2147  020242
2148  020242  104423
2149
2150
2151
2152
```

ERROR HANDLER --ERR14__ DATA ERROR ON READ

```
        BGNMSG  ERR14
ERR14::
        PRINTB  #FMT31,LINPUT,AINPUT,EINPUT   ;PRINT INPUT AREA RESULT
        MOV     EINPUT,-(SP)
        MOV     AINPUT,-(SP)
        MOV     LINPUT,-(SP)
        MOV     #FMT31,-(SP)
        MOV     #4,-(SP)
        MOV     SP,R0
        TRAP    C$PNTB
        ADD     #12,SP
        JSR     PC,NULERR       ;TERMINATE ERROR MESSAGE
        ENDMSG
L10013:
        TRAP    C$MSG

        ;-------------------------------------------------------------------------
        .SBTTL  ERROR HANDLER --ERR15--  ERROR ON READ IDB
        ;-------------------------------------------------------------------------
```

```
2153  020244
2154  020244
2155  020244  012702  000010          ERR15:: BGNMSG  ERR15
2156  020250  004737  020324                  MOV     #10,R2          ;SPECIFY COUNT TO PRINT 4 REGISTERS
2157  020254  012737  006322  002210          JSR     PC,PRTREG       ;PRINT REGISTERS
2158  020262                                  MOV     #INPUT,LINPUT   ;SPECIFY INPUT LOCATION FOR PRINT
2159  020262  013746  002206                  PRINTB  #FMT31,LINPUT,AINPUT,EINPUT   ;PRINT INPUT AREA RESULT
2160  020266  013746  002204                  MOV     EINPUT,-(SP)
2161  020272  013746  002210                  MOV     AINPUT,-(SP)
2162  020276  012746  020500                  MOV     LINPUT,-(SP)
2163  020302  012746  000004                  MOV     #FMT31,-(SP)
2164  020306  010600                          MOV     #4,-(SP)
2165  020310  104414                          MOV     SP,R0
2166  020312  062706  000012                  TRAP    C$PNTB
2167  020316  004737  020432                  ADD     #12,SP
2168  020322                                  JSR     PC,NULERR       ;COMMON ERROR MESSAGE TERMINATOR
2169  020322                                  ENDMSG
2170  020322  104423                  L10014: TRAP    C$MSG
2171                                          ;-------------------------------------------------------------
2172                                          .SBTTL  PRTREG SUBROUTINE TO PRINT SEVERAL REGISTER RESULTS
2173                                          ;-------------------------------------------------------------
2174
2175  020324                          PRTREG:                 ;PRINT SEVERAL TR79 REGISTER RESULTS
2176  020324  004737  020346                  JSR     PC,XHDR         ;PRINT RESULT HEADER
2177  020330  005001                          CLR     R1              ;CLEAR PRINT INDEX
2178  020332  004737  020370          10$:    JSR     PC,XPRT         ;PRINT RESULT
2179  020336  005721                          TST     (R1)+           ;INCREMENT PRINT INDEX
2180  020340  020201                          CMP     R2,R1           ;IF MORE REGISTERS TO PRINT
2181  020342  101373                          BHI     10$             ;  THEN PRINT NEXT REGISTER
2182  020344  000207                          RTS     PC
2183
2184                                          ;-------------------------------------------------------------
2185                                          .SBTTL  XHDR    SUBROUTINE TO PRINT RESULTS HEADER
2186                                          ;-------------------------------------------------------------
2187
2188  020346                          XHDR:   PRINTB  #FMT51                  ;PRINT RESULTS HEADER
2189  020346  012746  020566                  MOV     #FMT51,-(SP)
2190  020352  012746  000001                  MOV     #1,-(SP)
2191  020356  010600                          MOV     SP,R0
2192  020360  104414                          TRAP    C$PNTB
2193  020362  062706  000004                  ADD     #4,SP
2194  020366  000207                          RTS     PC
2195
2196
2197
2198                                          ;-------------------------------------------------------------
2199                                          .SBTTL  XPRT    SUBROUTINE TO PRINT ONE REGISTER RESULT
2200                                          ;-------------------------------------------------------------
2201
2202  020370                          XPRT:
2203  020370                                  PRINTB  #FMT52,TPT52(R1),TRCR(R1),ETRCR(R1),ATRCR(R1)
2204  020370  016146  002164                  MOV     ATRCR(R1),-(SP)
2205  020374  016146  002174                  MOV     ETRCR(R1),-(SP)
2206  020400  016146  002242                  MOV     TRCR(R1),-(SP)
2207  020404  016146  020454                  MOV     TPT52(R1),-(SP)
2208  020410  012746  020653                  MOV     #FMT52,-(SP)
```

```
                        XPRT    SUBROUTINE TO PRINT ONE REGISTER RESULT

2209  020414  012746  000005            MOV     #5,-(SP)
2210  020420  010600                    MOV     SP,R0
2211  020422  104414                    TRAP    C$PNTB
2212  020424  062706  000014            ADD     #14,SP
2213  020430  000207                    RTS     PC
2214
2215                                    ;-------------------------------------------------------------------------------
2216                                    .SBTTL          SUBROUTINE TO PERFORM 'PRINTB   #ENDEMB'
2217                                    ;-------------------------------------------------------------------------------
2218
2219  020432                    NULERR: PRINTB  #ENDEMB         ;TERMINATE ERROR MESSAGE
2220  020432  012746  020464            MOV     #ENDEMB,-(SP)
2221  020436  012746  000001            MOV     #1,-(SP)
2222  020442  010600                    MOV     SP,R0
2223  020444  104414                    TRAP    C$PNTB
2224  020446  062706  000004            ADD     #4,SP
2225  020452  000207                    RTS     PC
2226                                    ;-----------------------------------------------------
2227                                    .SBTTL  FORMAT SPEC'S FOR ERROR HANDLERS -- 'FMT___'
```

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```
2228
2229
2230                                    ;------------------TEXT POINTERS USED IN FORMAT SPECS-------------------
2231
2232  020454  020702  020717  020734    TPT52:  .WORD   T52A,T52B,T52C,T52D     ;POINTERS TO REGISTER NAME TEXT
2233  020462  020751
2234
2235                                    ;------------- FORMAT SPEC'S USED BY ERROR HANDLERS -------------------------
2236
2237                                    .NLIST  BEX
      020464  047045  000062            ENDEMB: .ASCIZ  /%N2/
      020470  047045     000            NEWLIN: .ASCIZ  /%N/
      020473     045  022516  000124    FMTTXT: .ASCIZ /%N%T/
      020500  040445  044440  050116    FMT31:  .ASCIZ /%A INPUT AT LOCATION  %06%A  IS  %06%A  EXPECTED  %06/
      020566  047045  051445  022464    FMT51:  .ASCIZ /%N%S4%AREGISTER%S4%ALOCATION%S4%AEXPECTED%S4%AACTUAL/
      020653     045  022516  032123    FMT52:  .ASCIZ /%N%S4%T%06%S6%06%S6%06/
      020702  047503  046515  047101    T52A:   .ASCIZ /COMMAND     /
      020717     123  040524  052524    T52B:   .ASCIZ /STATUS      /
      020734  047527  042122  041440    T52C:   .ASCIZ /WORD COUNT  /
      020751     102  051525  040440    T52D:   .ASCIZ /BUS ADDRESS /

                                        .SBTTL  ERROR MESSAGES
```

```
                        ;-----------------------------------------------------------------------
                        ;------------ ERROR MESSAGES USED BY ERROR CALL'S ----------------------
                        ;-----------------------------------------------------------------------

020766 047516 020124 047117 EM2:     .ASCIZ  /NOT ON LINE/
021002 051127 052111 020105 EM4A:    .ASCIZ  /WRITE ENABLE RING NOT PRESENT/
021040 051124 034467 047040 EM2A:    .ASCIZ  /TR79 NOT READY/
021057    120 040514 042503 M2A:     .ASCIZ  /PLACE UNIT ON LINE AFTER TAPE MOTION HAS STOPPED/
021140 047117 046040 047111 M2A1:    .ASCIZ  /ON LINE ERROR/
021156 051040 053505 047111 MRW:     .ASCIZ / REWIND ERROR/          ;NOT FROM TEST REWIND AT LOAD POINT
021174 042440 052130 047105 M16SFL:  .ASCIZ / EXTENSION  BIT 16 FAILED TO SET/
021235    040 054105 042524 M16CFL:  .ASCIZ / EXTENSION BIT 16 FAILED TO CLEAR/
021277    040 054105 042524 M17SFL:  .ASCIZ / EXTENSION BIT 17 FAILED TO SET/
021337    040 054105 042524 M17CFL:  .ASCIZ / EXTENSION BIT 17 FAILED TO CLEAR /
021402 054105 042524 051516 MXCFL:   .ASCIZ /EXTENSION BIT(S) FAILED TO CLEAR/
021443    040 053520 041522 MPWCL:   .ASCIZ / PWRCLR BIT CLEARED TOO SOON/
021500 050040 051127 046103 MPWST:   .ASCIZ / PWRCLR BIT NOT CLEAR AFTER 900 MIILISEC/
021551    040 040506 046111 EM7:     .ASCIZ / FAILED TO LOAD VALUE INTO WORD COUNT REGISTER/
021630 040506 046111 042105 EM6:     .ASCIZ /FAILED TO LOAD VALUE INTO BUS ADDRESS REGISTER/
021707    040 051124 034467 MINTFL:  .ASCIZ / TR79 FAILED TO INTERRUPT/
021741    040 037440    000 MQM:     .ASCIZ  / ?/
021745    122 051505 052105 MRSTFL:.ASCIZ   /RESET  /
021755    127 044522 042524 MWRTFL:  .ASCIZ  /WRITE  /
021765    122 040505 020104 MRDFL:   .ASCIZ  /READ  /
021774 050123 041501 020105 MSRVFL:  .ASCIZ  /SPACE REVERSE  /
022014 051105 051501 020105 MERFL:   .ASCIZ  /ERASE  /
022024 051040 046505 053117 MRMVRG:  .ASCIZ  / REMOVE WRITE ENABLE RING LOAD & PLACE ONLINE /
022103    040 047111 042523 FMTRGI:  .ASCIZ  / INSERT WRITE ENABLE RING LOAD & PLACE ONLINE/
022161    111 052116 051105 MIENFL:  .ASCIZ  /INTERRUPT ENABLE  /
022204 047111 042524 051122 MIDSFL:  .ASCIZ  /INTERRUPT DISABLE /
022227    120 053517 051105 MPCFL:   .ASCIZ  /POWER CLEAR  /
022245    127 044522 042524 MWIPLFL:.ASCIZ  /WRITE ID BLOCK PAST LOAD POINT  /
022306 042522 044527 042116 MRWLPFL:.ASCIZ  /REWIND FROM LOAD POINT  /
022337    111 046114 043505 MILFFL:  .ASCIZ  /ILLEGAL FUNCTION  /
022362 051127 052111 020105 MWLPFL:  .ASCIZ  /WRITE FROM LOAD  POINT  /
022413    127 044522 042524 MWEFFL:  .ASCIZ  /WRITE END OF FILE  /
022437    127 044522 042524 MWELPFL:.ASCIZ  /WRITE END OF FILE FROM  LOAD POINT  /
022504 051127 052111 020105 MWILPFL:.ASCIZ  /WRITE ID BLOCK FROM LOAD POINT  /
022545    125 044516 020124 MUNOFLN:.ASCIZ  /UNIT DID NOT GO OFF LINE  /
022600 043117 020106 044514 MOFLEFL:.ASCIZ  /OFF LINE ERROR  /
022621    122 053505 047111 MRWOFL:  .ASCIZ  /REWIND OFF LINE  /
022643    122 040505 020104 MRDERR:  .ASCIZ  /READ  DATA ERROR /
022665    123 040520 042503 MSREFFL:.ASCIZ  /SPACE REVERSE OVER END OF FILE  /
022726 042522 042101 042440 MREFFL:  .ASCIZ  /READ END OF FILE  /
022751    127 044522 042524 MWTOFL:  .ASCIZ  /WRITE TIME OUT  /
022772 042522 042101 052040 MRTOFL:  .ASCIZ  /READ TIME OUT  /
023012 051127 052111 020105 MWNXFL:  .ASCIZ  /WRITE NON-EXISTENT MEMORY  /
023046 054105 042524 051516 MNXBFL:  .ASCIZ  /EXTENSION BIT 13 NON EXISTENT MEMORY  /
023115    105 020101 044502 MNXMFL:  .ASCIZ  /EA BITS 12 AND 13- NON EXISTENT MEMORY  /
023166 042522 042101 041440 MRCFL:   .ASCIZ  /READ COUNT  /
023203    105 042116 047440 METFL:   .ASCIZ  /END OF TAPE  /
023221    120 051525 020110 MRSTU:   .ASCIZ  /PUSH RESET BUTTON ON TAPE UNIT  /
023262 040515 052516 046101 MMRSFL:  .ASCIZ  /MANUAL RESET  /
023301    127 044522 042524 MWPETFL:.ASCIZ  /WRITE  PAST END OF TAPE  /
023333    123 040520 042503 MSRETFL:.ASCIZ  /SPACE REVERSE PAST END OF TAPE  /
023374 042522 042101 050040 MRPETFL:.ASCIZ  /READ PAST END OF TAPE  /
```

```
CZTRAC.P11    30-DEC-81 1:08          ERROR MESSAGES

        023424  051127  052111  020105  MWEFETF:.ASCIZ  /WRITE END  OF FILE  PAST END OF TAPE   /
        023474  042522  042101  042440  MREFETF:.ASCIZ  /READ END OF FILE  PAST END  OF TAPE   /
        023543     127  044522  042524  MWENFL: .ASCIZ  /WRITE ENABLE  /
        023562  050123  041501  020105  MSRLPFL:.ASCIZ  /SPACE REVERSE AT LOAD POINT  /
        023620  050123  041501  020105  MSRIFL: .ASCIZ  /SPACE REVERSE AT ID BLOCK  /
        023654  042522  042101  044440  MRIBFL: .ASCIZ  /READ ID BLOCK  /
        023674  053105  047105  050040  MPARFL: .ASCIZ  /EVEN PARITY  /
        023712  053105  047105  050040  MEPSRFL:.ASCIZ  /EVEN PARITY SPACE REVERSE  /
        023746  042522  042101  042440  MREPFL: .ASCIZ  /READ EVEN PARITY  /
        023771     122  053505  047111  MEOT:   .ASCIZ  /REWINDING...GOING OFF LINE /
                                        ;-----------------------------------------------
                                        .LIST   BEX
  2238          024026                  .EVEN
  2239
  2240                                  .SBTTL LOAD DEVICE PROTECTION TABLE
```

```
CZTRAC.P11    30-DEC-81 11:08          LOAD DEVICE PROTECTION TABLE

  2241                                 ;////////////////////////////////////////////////////////////////////////////////
  2242                                 ;/ THIS TABLE IDENTIFIES THE LOAD DEVICE TO THE SUPERVISOR, SO THAT IT CAN BE
  2243                                 ;/ PROTECTED FROM TESTING. IF DESIRED.
  2244                                 ;////////////////////////////////////////////////////////////////////////////////
  2245
  2246
  2247  024026                                 BGNPROT
  2248  024026                         L$PROT::
  2249  024026  177777                        .WORD   -1      ;DON'T CHK CSR ADRS
  2250  024030  177777                        .WORD   -1      ;DON'T CHK VECTOR ADRS
  2251  024032  177777                        .WORD   -1      ;DON'T CHK PRIOITY LEVEL
  2252  024034                                 ENDPROT
  2253
  2254                                 .SBTTL INITIALIZE SECTION
```

```
                        ;////////////////////////////////////////////////////////////////////////
                        ;/ THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                        ;/ AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
                        ;////////////////////////////////////////////////////////////////////////


                            BGNINIT
                        L$INIT::
024034 010637 002236        MOV     SP,PSTACK               ;SAVE BASE LEVEL STACK POINTER
                                                    ;GET TR79 ADDRESS, VECTOR, PRIORITY LEVEL
024040 005037 002234        CLR     LOGDEV                  ;SET LOGICAL DEVICE NUMBER = 0
024044                      GPHARD  LOGDEV,R1               ;GET P-TABLE POINTER
024044 013700 002234        MOV     LOGDEV,R0
024050 104442               TRAP    C$GPHRD
024052 010001               MOV     R0,R1
024054 012102               MOV     (R1)+,R2                ;GET THE TR79 CSR ADDRESS
024056 010237 002242        MOV     R2,TRCR                 ;COPY COMMAND REGISTER ADDRESS
024062 005722               TST     (R2)+                   ;GET TR79 STATUS REGISTER ADDRESS
024064 010237 002244        MOV     R2,TRSR                 ;COPY STATUS REGISTER ADDRESS
024070 005722               TST     (R2)+                   ;GET TR79 WORD COUNT REGISTER ADDRESS
024072 010237 002246        MOV     R2,TRWC                 ;COPY WORD COUNT REGISTER ADDRESS
024076 005722               TST     (R2)+                   ;GET TR79 BUS ADDRESS REGISTER ADDRESS
024100 010237 002250        MOV     R2,TRBA                 ;COPY BUS ADDRESS REGISTER ADDRESS
024104 012137 002252        MOV     (R1)+,TRVCT             ;SAVE INTERRUPT VECTOR ADDRESS
024110 012137 002254        MOV     (R1)+,TRPRT             ;SAVE TR79 DEVICE PRIORITY
024114                      SETPRI  PRI07                   ;SET PRIORITY TO INHIBIT TR79 INTERRUPTS
024114 013700 000340        MOV     PRI07,R0
024120 104441               TRAP    C$SPRI
024122 042777 000100 156112 BIC     #BIT6,@TRCR             ;CLEAR TR79 INERRUPT ENABLE BIT
024130 005037 002240        CLR     INTFLG                  ;CLEAR TR79 INTERRUPT FLAG
024134                      SETVEC  TRVCT,#INTIN,TRPRT      ;SET UP TR79 VECTOR
024134 013746 002254        MOV     TRPRT,-(SP)
024140 012746 017720        MOV     #INTIN,-(SP)
024144 013746 002252        MOV     TRVCT,-(SP)
024150 012746 000003        MOV     #3,-(SP)
024154 104437               TRAP    C$SVEC
024156 062706 000010        ADD     #10,SP
024162 005737 002152        TST     RPTCNT                  ;IS TEST4 REPEAT COUNT = 0
024166 001003               BNE     ENDIN                   ;NO. EXIT INIT
024170 012737 177777 002152 MOV     #-1,RPTCNT              ;YES. SET REPEAT COUNT = -1
024176                  ENDIN:  ENDINIT                     ;END OF "INIT" CODE
024176                  L10016:
024176 104411               TRAP    C$INIT


                        .SBTTL AUTO DROP UNIT SECTION
```

CZTRAC.P11 30-DEC-81 11:08 AUTO DROP UNIT SECTION

```
2301                                    ;////////////////////////////////////////////////////////////////////////////////
2302                                    ;/ THE AUTO DROP CODING DETERMINES WHETHER OR NOT THE DEVICE WHOSE P-TABLE
2303                                    ;/ WAS JUST OBTAINED IS READY FOR TESTING.  ND IT IS DROPPED IF NOT READY.
2304                                    ;////////////////////////////////////////////////////////////////////////////////
2305
2306
2307  024200                                    BGNAUTO
2308  024200                            L$AUTO::
2309  024200                                    ENDAUTO
2310  024200                            L10017:
2311  024200  104461                           TRAP    C$AUTO
2312
2313                                    .SBTTL CLEANUP CODING SECTION
2314
2315                                    ;////////////////////////////////////////////////////////////////////////////////
2316                                    ;/ THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
2317                                    ;/ AT THE END OF THE TEST SEQUENCE ON A PARTICULAR UNIT.
2318                                    ;////////////////////////////////////////////////////////////////////////////////
2319
2320  024202                                    BGNCLN
2321  024202                            L$CLEAN::
2322  024202                                    ENDCLN
2323  024202                            L10020:
2324  024202  104412                           TRAP    C$CLEAN
2325
2326
2327
2328
2329
2330
2331                                    .SBTTL  TEST1   NULL TEST
```

```
2332
2333
2334                            ;////////////////////////////////////////////////////////////////////////
2335                            ;TEST1  THIS IS A NULL TEST INCLUDED TO PRESERVE THE TEST NUMBERING
2336                            ;       USED IN CZTRAB. MANUAL INTERVENTION TESTS ARE INCLUDED IN TEST6
2337                            ;////////////////////////////////////////////////////////////////////////
2338
2339
2340
2341  024204                            BGNTST
2342  024204                    T1::
2343  024204                            ENDTST
2344  024204                    L10021:
2345  024204  104401                    TRAP    CSETST
2346
2347
2348
2349
2350
2351                            .SBTTL  TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION
2352
```

```
2353
2354
2355
2356                            ;////////////////////////////////////////////////////////////////
2357                            ;TEST2  CHECKS THE INTERFACE LOGIC WITH MINIMUM TAPE MOTION
2358                            ;
2359                            ;       TEST2 INCLUDES:                         TEST NAME IN CZTRAB
2360                            ;
2361                            ;       REWIND FROM LOAD POINT                    TESTI
2362                            ;       INSURE WRITE RING                         TESTC
2363                            ;       UNIBUS EXTENSION BIT TEST                 TESTD
2364                            ;       INTERRUPT BIT SET TEST                    TESTE
2365                            ;       INTERRUPT BIT CLEAR TEST                  TESTF
2366                            ;       ILLEGAL COMMAND TEST                      TESTJ
2367                            ;       WRITE FROM LOAD POINT                     TESTK
2368                            ;       WRITE EOF FROM LOAD POINT                 TESTM
2369                            ;       TEST TR79 POWER CLEAR                     TESTG
2370                            ;       SPACE REVERSE AT LOAD POINT               TESTAT
2371                            ;       NXM TEST                                  TESTAB
2372                            ;       BUS ADDRESS BIT TEST                      TESTAU
2373                            ;       WORD COUNT BIT TEST                       TESTBA
2374                            ;////////////////////////////////////////////////////////////////
2375
2376
2377  024206                                BGNTST
2378  024206                    T2::
2379  024206                    TEST2:                          ;NEGATE INTERRUPT ENABLE
2380  024206  042777  000100  156026          BIC     #BIT6,@TRCR             ;CLEAR TR79 INTERRUPT ENABLE BIT
2381  024214                    T2I:                            ;TEST REWIND AT LOAD POINT
2382  024214  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2383  024220  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
2384  024224  103001                          BCC     10$                     ;NO ERROR
2385  024226                                  ERROR                           ;REPORT ERROR
2386  024226  104460                          TRAP    C$ERROR
2387  024230                    10$:                            ;ON LINE AND READY
2388  024230  032777  000040  156006          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
2389  024236  001010                          BNE     30$                     ;  THEN SKIP PRELIMINARY REWIND
2390  024240  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2391  024244  004737  012416                  JSR     PC,RWIND                ;REWIND
2392  024250  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
2393  024254  103001                          BCC     30$                     ;NO ERRORS.
2394  024256                                  ERROR                           ;REPORT ERROR
2395  024256  104460                          TRAP    C$ERROR
2396  024260                    30$:                            ;AT LOAD POINT
2397  024260  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
2398  024264  103001                          BCC     35$                     ;NO ERROR
2399  024266                                  ERROR                           ;REPORT ERROR
2400  024266  104460                          TRAP    C$ERROR
2401  024270                    35$:                            ;REWIND AT LOAD POINT
2402  024270  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2403  024274  004737  012416                  JSR     PC,RWIND                ;REWIND AT LOAD POINT
2404  024300  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
2405  024304  012737  003220  002174          MOV     #3220,ETRCR             ;EXPECTED
2406  024312  012737  002040  002176          MOV     #2040,ETRSR             ;EXPECTED
2407  024320  023737  002174  002164          CMP     ETRCR,ATRCR             ;CHECK COMMAND REGISTER
2408  024326  001401                          BEQ     40$                     ;OK
```

```
2409  024330  005202                          INC     R2                      ;INDICATE ERROR
2410  024332                          40$:
2411  024332  023737  002176  002166          CMP     ETRSR,ATRSR             ;CHECK STATUS REGISTER
2412  024340  001401                          BEQ     50$                     ;OK
2413  024342  005202                          INC     R2                      ;INDICATE ERROR
2414  024344                          50$:
2415  024344  005702                          TST     R2                      ;ANY ERRORS?
2416  024346  001404                          BEQ     60$                     ;NO
2417          000030                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2418  024350                                  ERRSOFT ENUM,MRWLPFL,ERR4       ;REPORT ERROR
2419  024350  104457                          TRAP    C$ERSOFT
2420  024352  000030                          .WORD   24
2421  024354  022306                          .WORD   MRWLPFL
2422  024356  020064                          .WORD   ERR4
2423  024360                          60$:
2424  024360                          T2C:                            ;CHECK FOR WRITE ENABLE RING
2425  024360  032777  000004  155656          BIT     #FPTS,@TRSR             ;IF WRITE ENABLE RING IS PRESENT
2426  024366  001404                          BEQ     10$                     ;  THEN CONTINUE
2427          000031                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2428  024370                                  ERRSOFT ENUM,EM4A,ERR2          ;REPORT ERROR. GET RING INSTALLED
2429  024370  104457                          TRAP    C$ERSOFT
2430  024372  000031                          .WORD   25
2431  024374  021002                          .WORD   EM4A
2432  024376  017744                          .WORD   ERR2
2433  024400                          10$:                            ;RING IS PRESENT
2434  024400  004737  014066                  JSR     PC,TESTN                ;MAKE SURE ON LINE
2435  024404  103001                          BCC     20$                     ;OK
2436  024406                                  ERROR                           ;REPORT ERROR
2437  024406  104460                          TRAP    C$ERROR
2438  024410                          20$:
2439  024410                          T2D:                            ;TEST SET AND CLEAR UNIBUS EXTENSION BITS
2440  024410  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2441  024414  052777  010000  155620          BIS     #010000,@TRCR           ;SET UNIBUS EXTENSION BIT 16
2442  024422  032777  010000  155612          BIT     #010000,@TRCR           ;TEST UNIBUS EXTENSION BIT 16
2443  024430  001004                          BNE     10$                     ;SKIP IF OK
2444          000032                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2445  024432                                  ERRSOFT ENUM,M16SFL             ;REPORT ERROR
2446  024432  104457                          TRAP    C$ERSOFT
2447  024434  000032                          .WORD   26
2448  024436  021174                          .WORD   M16SFL
2449  024440  000000                          .WORD   0
2450  024442                          10$:
2451  024442  042777  010000  155572          BIC     #010000,@TRCR           ;CLEAR THE BIT
2452  024450  032777  010000  155564          BIT     #010000,@TRCR           ;TEST THE BIT
2453  024456  001404                          BEQ     20$                     ;SKIP IF CLEAR
2454  024460                                  ERRSOFT ENUM,M16CFL             ;REPORT ERROR
2455  024460  104457                          TRAP    C$ERSOFT
2456  024462  000032                          .WORD   26
2457  024464  021235                          .WORD   M16CFL
2458  024466  000000                          .WORD   0
2459  024470                          20$:
2460  024470  052777  020000  155544          BIS     #020000,@TRCR           ;SET UNIBUS EXTENSION BIT 17
2461  024476  032777  020000  155536          BIT     #020000,@TRCR           ;TEST UNIBUS EXTENSION BIT 17
2462  024504  001004                          BNE     30$                     ;SKIP IF OK
2463  024506                                  ERRSOFT ENUM,M17SFL             ;REPORT ERROR
2464  024506  104457                          TRAP    C$ERSOFT
```

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```
2465  024510  000032                          .WORD   26
2466  024512  021277                          .WORD   M17SFL
2467  024514  000000                          .WORD   0
2468  024516                          30$:
2469  024516  042777  020000  155516          BIC     #020000,@TRCR           ;CLEAR THE BIT
2470  024524  032777  020000  155510          BIT     #020000,@TRCR           ;TEST THE BIT
2471  024532  001404                          BEQ     40$                     ;SKIP IF OK
2472  024534                                  ERRSOFT ENUM,M17CFL             ;REPORT ERROR
2473  024534  104457                          TRAP    C$ERSOFT
2474  024536  000032                          .WORD   26
2475  024540  021337                          .WORD   M17CFL
2476  024542  000000                          .WORD   0
2477  024544                          40$:
2478  024544  052777  030000  155470          BIS     #30000,@TRCR            ;SET BOTH EA BITS
2479  024552  032777  010000  155462          BIT     #10000,@TRCR            ;TEST BIT
2480  024560  001004                          BNE     50$                     ;OK
2481          000033                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2482  024562                                  ERRSOFT ENUM,M16SFL             ;REPORT ERROR
2483  024562  104457                          TRAP    C$ERSOFT
2484  024564  000033                          .WORD   27
2485  024566  021174                          .WORD   M16SFL
2486  024570  000000                          .WORD   0
2487  024572                          50$:
2488  024572  032777  020000  155442          BIT     #20000,@TRCR            ;TEST SECOND BIT
2489  024600  001004                          BNE     60$                     ;OK
2490  024602                                  ERRSOFT ENUM,M17SFL             ;REPORT ERROR
2491  024602  104457                          TRAP    C$ERSOFT
2492  024604  000033                          .WORD   27
2493  024606  021277                          .WORD   M17SFL
2494  024610  000000                          .WORD   0
2495  024612                          60$:
2496  024612  042777  030000  155422          BIC     #30000,@TRCR            ;CLEAR EA BITS
2497  024620  032777  030000  155414          BIT     #30000,@TRCR            ;MAKE SURE
2498  024626  001404                          BEQ     70$                     ;OK
2499  024630                                  ERRSOFT ENUM,MXCFL              ;REPORT ERROR
2500  024630  104457                          TRAP    C$ERSOFT
2501  024632  000033                          .WORD   27
2502  024634  021402                          .WORD   MXCFL
2503  024636  000000                          .WORD   0
2504  024640                          70$:
2505  024640                          T2E:                                    ;TEST SET INTERRUPT ENABLE BIT
2506  024640                                  SETPRI  PRI07                   ;SET PRIORITY TO INHIBIT INTERRUPTS
2507  024640  013700  000340                  MOV     PRI07,R0
2508  024644  104441                          TRAP    C$SPRI
2509  024646  052777  000100  155366          BIS     #BIT6,@TRCR             ;SET INTERRUPT ENABLE BIT
2510  024654  032777  000100  155360          BIT     #BIT6,@TRCR             ;CHECK IF SET
2511  024662  001004                          BNE     20$                     ;OK
2512          000034                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2513  024664                                  ERRSOFT ENUM,MIENFL             ;REPORT FAILURE
2514  024664  104457                          TRAP    C$ERSOFT
2515  024666  000034                          .WORD   28
2516  024670  022161                          .WORD   MIENFL
2517  024672  000000                          .WORD   0
2518  024674                          20$:
2519  024674                          T2F:                                    ;TEST CLEAR INTERRUPT ENABLE BIT
2520  024674  042777  000100  155340          BIC     #BIT6,@TRCR             ;CLEAR INTERRUPT ENABLE
```

```
2521  024702  032777  000100  155332          BIT     #BIT6,@TRCR             ;CHECK IF CLEAR
2522  024710  001404                          BEQ     10$                     ;SKIP IF ZERO
2523          000035                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2524  024712                                  ERRSOFT ENUM,MIDSFL             ;REPORT FAILURE
2525  024712  104457                          TRAP    C$ERSOFT
2526  024714  000035                          .WORD   29
2527  024716  022204                          .WORD   MIDSFL
2528  024720  000000                          .WORD   0
2529  024722                          10$:
2530  024722                          T2J:                    ;TEST ILLEGAL COMMANDS
2531  024722  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2532  024726  103001                          BCC     10$                     ;ON LINE. NO ERROR
2533  024730                                  ERROR                           ;REPORT ERROR
2534  024730  104460                          TRAP    C$ERROR
2535  024732                          10$:                    ;READY
2536  024732  032777  000040  155304          BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
2537  024740  001010                          BNE     20$                     ; THEN SKIP REWIND
2538  024742  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2539  024746  004737  012416                  JSR     PC,RWIND                ;REWIND
2540  024752  004737  013534                  JSR     PC,CHEKI                ;CHECK FOR ERROR
2541  024756  103001                          BCC     20$                     ;OK
2542  024760                                  ERROR                           ;REPORT ERROR
2543  024760  104460                          TRAP    C$ERROR
2544  024762                          20$:                    ;AT LOAD POINT
2545  024762  012737  025052  025050          MOV     #55$,50$                ;POINT TO FIRST ILLEGAL FUNCTION
2546  024770  004737  014066          30$:    JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2547  024774  103001                          BCC     35$                     ;ON LINE. NO ERROR
2548  024776                                  ERROR                           ;REPORT ERROR
2549  024776  104460                          TRAP    C$ERROR
2550  025000                          35$:                    ;SELECT NEXT FUNCTION
2551  025000  013703  025050                  MOV     50$,R3                  ;POINT TO NEXT ILLEGAL FUNCTION
2552  025004  012337  002212                  MOV     (R3)+,USEA              ;SPECIFY FUNCTION TO TRY
2553  025010  010337  025050                  MOV     R3,50$                  ;UPDATE POINTER
2554  025014  004737  013206                  JSR     PC,DOILC                ;INITIATE OPERATION
2555  025020  004737  013664                  JSR     PC,CHEKJ                ;CHECK RESULT
2556  025024  103004                          BCC     40$                     ;OK
2557          000036                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2558  025026                                  ERRSOFT ENUM,MILFFL,ERR4        ;REPORT ERROR
2559  025026  104457                          TRAP    C$ERSOFT
2560  025030  000036                          .WORD   30
2561  025032  022337                          .WORD   MILFFL
2562  025034  020064                          .WORD   ERR4
2563  025036                          40$:
2564  025036  023727  025050  025066          CMP     50$,#60$                ;IS THERE ANOTHER FUNCTION TO TRY
2565  025044  001351                          BNE     30$                     ;YES. GO TRY IT
2566  025046  000407                          BR      60$                     ;NO. CONTINUE WITH NEXT SUBTEST
2567
2568  025050  025052                  50$:    .WORD   #55$                    ;POINTER TO NEXT FUNCTION TO TRY
2569  025052  000406  001012  001414  55$:    .WORD   ILC03,ILC05,ILC06,ILC11,ILC12,ILC14 ;LIST OF ILLEGAL FUNCTIONS
2570  025060  000022  000424  001030
2571  025066                          60$:
2572
```

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2573
2574  025066                          TSTINT:                 ;TEST TR79 INTERRUPT
2575                                          :NOTE:
2576                                  ;       THE FOLLOWING CODE TO TEST TR79 INTERRUPTS IS INCLUDED FOR
2577                                  ;       COMPLETENESS. THIS SECTION OPENS WITH A JUMP SO THAT, AS WRITTEN,
2578                                  ;       THE INTERRUPT TEST IS NOT EXECUTED.
2579                                  ;
2580                                  ;       TO EXECUTE THE INTERRUPT TEST, THE JUMP CAN BE CHANGED TO A NOP,NOP
2581                                  ;       USING OD  OR CONSOLE SWITCHES WHEN THE DIAGNOSTIC IS RUN.
2582                                  ;
2583                                  ;       THIS APPROACH IS ADOPTED TO ACCOMADATE  THE FACT THAT TR79 GENERATED
2584                                  ;       INTERRUPTS ALLWAYS HUNG THE PROCESSOR DURING TESTING OF THIS DRS
2585                                  ;       COMPATIBLE VERSION OF THE DIAGNOSTIC.
2586                                  ;                       10-NOV-81
2587                                  ;                       GLORIA MEREDITH
2588                                  ;                       MERRIMACK DIAGNOSTIC ENGINEERING
2589                                  ;                       MAIL:    MK1-1/L38
2590                                  ;                       DTN:     264-6146
2591                                  ;                       ENET:    VAX4::MEREDITH
2592
2593
2594  025066  000137  025222          40$:    JMP     TESTK                   ;OMIT EXECUTION IF INTERRUPT TEST
2595                                                  ;SET UP TO INTERRUPT ON ILLEGAL COMMAND
2596  025072  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2597  025076  103001                          BCC     50$                     ;ON LINE. NO ERROR
2598  025100                                  ERROR                           ;REPORT ERROR
2599  025100  104460                          TRAP    C$ERROR
2600  025102                          50$:                            ;ENABLE INTERRUPT AND PERFORM ILLEGAL FUNCTION
2601  025102  012737  000406  002212          MOV     #ILC03,USEA             ;SPECIFY ILLEGAL FUNCTION
2602  025110  052737  000101  002212          BIS     #INTENB!GOBIT,USEA      ;SPECIFY INTERRUPT ENABLE AND GO
2603  025116  042777  000001  155120          BIC     #BIT0,@TRSR             ;NEGATE INHIBIT TR79 OPERATION
2604  025124  012777  177777  155114          MOV     #-1,@TRWC               ;SPECIFY WORD COUNT
2605  025132  012777  006322  155110          MOV     #INPUT,@TRBA            ;SPECIFY BUS ADDRESS
2606  025140  012737  177777  002240          MOV     #-1,INTFLG              ;SPECIFY "EXPECTING INTERRUPT"
2607  025146                                  SETPRI  PRI03                   ;SET PRIORITY TO ALLOW TR79 INTERRUPTS
2608  025146  013700  000140                  MOV     PRI03,R0
2609  025152  104441                          TRAP    C$SPRI
2610  025154  013777  002212  155060          MOV     USEA,@TRCR              ;INITIATE TR79 OPERATION
2611  025162  004737  013354                  JSR     PC,RWWAIT               ;WAIT
2612  025166  004737  013254                  JSR     PC,CPYTRR               ;COPY REGISTERS
2613  025172  005737  002240                  TST     INTFLG                  ;TEST "INTERRUPT OCCURRED" INDICATOR
2614  025176  001404                          BEQ     60$                     ;O.K. INTERRUPT OCCURRED
2615          000037          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
2616  025200                                  ERRSOFT ENUM,MINTFL             ;REPORT ERROR
2617  025200  104457                          TRAP    C$ERSOFT
2618  025202  000037                          .WORD   31
2619  025204  021707                          .WORD   MINTFL
2620  025206  000000                          .WORD   0
2621  025210                          60$:    SETPRI  PRI07                   ;INHIBIT TR79 INTERRUPTS
2622  025210  013700  000340                  MOV     PRI07,R0
2623  025214  104441                          TRAP    C$SPRI
2624  025216  004737  013324                  JSR     PC,CPWR                 ;TR79 POWER CLEAR
2625  025222                          TESTK:                  ;TEST WRITE FROM LOAD POINT
2626  025222  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2627  025226  103001                          BCC     10$                     ;ON LINE. NO ERROR
2628  025230                                  ERROR                           ;REPORT ERROR
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2629  025230  104460                          TRAP    C$ERROR
2630  025232
2631  025232  032777  000040  155004  10$:    BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
2632  025240  001010                          BNE     20$                     ; THEN SKIP REWIND
2633  025242  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2634  025246  004737  012416                  JSR     PC,RWIND                ;REWIND
2635  025252  004737  013534                  JSR     PC,CHEKI                ;CHECK FOR ERROR
2636  025256  103001                          BCC     20$                     ;OK
2637  025260                                  ERROR                           ;REPORT ERROR
2638  025260  104460                          TRAP    C$ERROR
2639  025262                          20$:                    ;WRITE AT LOAD POINT
2640  025262  012737  177700  002214          MOV     #-100,USEB              ;SPECIFY WORD COUNT FOR WRITE
2641  025270  004737  012642                  JSR     PC,WRT                  ;TRY TO WRITE AT LOAD POINT
2642  025274  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
2643  025300  012737  142602  002174          MOV     #142602,ETRCR           ;SPECIFY EXPECTED RESULT
2644  025306  012737  002040  002176          MOV     #2040,ETRSR             ;SPECIFY EXPECTED RESULT
2645  025314  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
2646  025322  001401                          BEQ     30$                     ;OK
2647  025324  005202                          INC     R2                      ;INDICATE ERROR
2648  025326                          30$:
2649  025326  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST STATUS REGISTER
2650  025334  001401                          BEQ     40$                     ;OK
2651  025336  005202                          INC     R2                      ;INDICATE ERROR
2652  025340                          40$:
2653  025340  005702                          TST     R2                      ;ANY ERRORS?
2654  025342  001404                          BEQ     50$                     ;NO
2655          000040                  ENUM = ^D<ENUM + 1>             ;INCREMENT ERROR NUMBER
2656  025344                                  ERRSOFT ENUM,MWLPFL,ERR4        ;REPORT ERROR
2657  025344  104457                          TRAP    C$ERSOFT
2658  025346  000040                          .WORD   32
2659  025350  022362                          .WORD   MWLPFL
2660  025352  020064                          .WORD   ERR4
2661  025354  004737  013324          50$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
2662  025360                          TESTM:                  ;TEST WRITE EOF FROM LOAD POINT
2663  025360  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2664  025364  103001                          BCC     10$                     ;ON LINE. NO ERROR
2665  025366                                  ERROR                           ;REPORT ERROR
2666  025366  104460                          TRAP    C$ERROR
2667  025370                          10$:                    ;READY
2668  025370  032777  000040  154646          BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
2669  025376  001010                          BNE     20$                     ; THEN SKIP REWIND
2670  025400  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2671  025404  004737  012416                  JSR     PC,RWIND                ;REWIND
2672  025410  004737  013534                  JSR     PC,CHEKI                ;CHECK FOR ERROR
2673  025414  103001                          BCC     20$                     ;OK
2674  025416                                  ERROR                           ;REPORT ERROR
2675  025416  104460                          TRAP    C$ERROR
2676  025420                          20$:                    ;AT LOAD POINT
2677  025420  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2678  025424  103001                          BCC     30$                     ;ON LINE. NO ERROR
2679  025426                                  ERROR                           ;REPORT ERROR
2680  025426  104460                          TRAP    C$ERROR
2681  025430                          30$:                    ;WRITE EOF AT LOAD POINT
2682  025430  004737  013072                  JSR     PC,WTEOF                ;TRY TO WRITE EOF AT LOAD POINT
2683  025434  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
2684  025440  012737  143234  002174          MOV     #143234 ETRCR           ;SPECIFY EXPECTED RESULT
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2685  025446  012737  002040  002176          MOV     #2040,ETRSR             ;SPECIFY EXPECTED RESULT
2686  025454  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
2687  025462  001401                          BEQ     40$                     ;OK
2688  025464  005202                          INC     R2                      ;INDICATE ERROR
2689  025466                          40$:
2690  025466  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
2691  025474  001401                          BEQ     50$                     ;OK
2692  025476  005202                          INC     R2                      ;INDICATE ERROR
2693  025500                          50$:
2694  025500  005702                          TST     R2                      ;ANY ERRORS?
2695  025502  001404                          BEQ     60$                     ;NO
2696          000041                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2697  025504                                  ERRSOFT ENUM,MWELPFL,ERR4       ;REPORT ERROR
2698  025504  104457                          TRAP    C$ERSOFT
2699  025506  000041                          .WORD   33
2700  025510  022437                          .WORD   MWELPFL
2701  025512  020064                          .WORD   ERR4
2702  025514                          60$:
2703                                                  ;TEST TR79 RESET (TR79 POWER CLEAR)
2704  025514                          T2G:    BRESET                          ;PDP-11 RESET
2705  025514  104433                          TRAP    C$RESET
2706  025516  012777  000026  154516          MOV     #26,@TRCR               ;SET A FUNCTION IN COMMAND REGISTER
2707                                                                          ;THIS IS A DUMMY COMMAND TO SEE IF
2708                                                                          ;   IT WILL CLEAR
2709  025524  052777  004000  154510          BIS     #BIT11,@TRCR            ;SET TR79 PWRCLR BIT
2710  025532  012701  177300                  MOV     #-500,R1                ;SET DELAY CONSTANT
2711  025536                          10$:
2712  025536  005201                          INC     R1                      ;COUNT A  DELAY TICK
2713  025540  001376                          BNE     10$                     ;KEEP TICKING
2714  025542  032777  004000  154472          BIT     #BIT11,@TRCR            ;IF TR79 POWER CLEAR BIT IS SET
2715  025550  001004                          BNE     20$                     ;CONTINUE
2716          000042                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2717  025552                                  ERRSOFT ENUM,MPWCL              ;ELSE REPORT ERROR.POWER CLEAR BIT
2718  025552  104457                          TRAP    C$ERSOFT
2719  025554  000042                          .WORD   34
2720  025556  021443                          .WORD   MPWCL
2721  025560  000000                          .WORD   0
2722  025562                          20$:
2723  025562  012737  002224  002220          MOV     #DLXPWR,DLX             ;SET POWER CLEAR DELAY CONSTANT
2724  025570  004737  013362                  JSR     PC,WWAIT                ;WAIT
2725  025574  032777  004000  154440          BIT     #BIT11,@TRCR            ;TEST PWRCLR BIT
2726  025602  001404                          BEQ     30$                     ;OK
2727          000043                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2728  025604                                  ERRSOFT ENUM,MPWST              ;REPORT ERROR
2729  025604  104457                          TRAP    C$ERSOFT
2730  025606  000043                          .WORD   35
2731  025610  021500                          .WORD   MPWST
2732  025612  000000                          .WORD   0
2733  025614                          30$:
2734  025614  032777  002000  154422          BIT     #BIT10,@TRSR            ;IF NOT ON LINE
2735  025622  001435                          BEQ     60$                     ; THEN OMIT CHECKING REGISTERS
2736  025624  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
2737  025630  042737  000036  002164          BIC     #00036,ATRCR            ;CLEAR UNWANTED BITS
2738  025636  012737  002200  002174          MOV     #2200,ETRCR             ;SPECIFY EXPECTED RESULT
2739  025644  012737  002247  002176          MOV     #2247,ETRSR             ;SPECIFY EXPECTED RESULT
2740  025652  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
```

```
2741  025660  001401                          BEQ     40$                     ;SKIP IF OK
2742  025662  005202                          INC     R2                      ;INDICATE ERROR
2743  025664                          40$:
2744  025664  043737  002176  002166          BIC     ETRSR,ATRSR             ;CLEAR UNWANTED BITS
2745  025672  005737  002166                  TST     ATRSR                   ;TEST STATUS REGISTER
2746  025676  001401                          BEQ     50$                     ;SKIP IF OK
2747  025700  005202                          INC     R2                      ;INDICATE ERROR
2748  025702                          50$:
2749  025702  005702                          TST     R2                      ;ANY ERRORS?
2750  025704  001404                          BEQ     60$                     ;NO
2751          000044                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2752  025706                                  ERRSOFT ENUM,MPCFL,ERR4         ;REPORT ERROR
2753  025706  104457                          TRAP    C$ERSOFT
2754  025710  000044                          .WORD   36
2755  025712  022227                          .WORD   MPCFL
2756  025714  020064                          .WORD   ERR4
2757  025716  004737  013324          60$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
2758  025722                          T2AT:                   ;TEST SPACE REVERSE AT LOAD POINT
2759  025722  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2760  025726  103001                          BCC     10$                     ;ON LINE. NO ERROR
2761  025730                                  ERROR                           ;REPORT ERROR
2762  025730  104460                          TRAP    C$ERROR
2763  025732                          10$:                    ;READY
2764  025732  032777  000040  154304          BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
2765  025740  001010                          BNE     20$                     ;SKIP REWIND
2766  025742  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2767  025746  004737  012416                  JSR     PC,RWIND                ;REWIND
2768  025752  004737  013534                  JSR     PC,CHEKI                ;CHECK FOR ERROR
2769  025756  103001                          BCC     20$                     ;OK
2770  025760                                  ERROR                           ;REPORT ERROR
2771  025760  104460                          TRAP    C$ERROR
2772  025762                          20$:                    ;AT LOAD POINT
2773  025762  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2774  025766  103001                          BCC     30$                     ;ON LINE. NO ERROR
2775  025770                                  ERROR                           ;REPORT ERROR
2776  025770  104460                          TRAP    C$ERROR
2777  025772                          30$:                    ;SPACE REVERSE AT LOAD POINT
2778  025772  012737  177777  002214          MOV     #-1,USEB                ;SPECIFY COUNT
2779  026000  004737  013024                  JSR     PC,SPR                  ;SPACE REVERSE AT LOAD POINT
2780  026004  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
2781  026010  012737  143610  002174          MOV     #143610,ETRCR           ;SPECIFY EXPECTED RESULT
2782  026016  012737  002040  002176          MOV     #2040,ETRSR             ;EXPECTED RESULT
2783  026024  012737  177777  002200          MOV     #-1,ETRWC               ;EXPECTED
2784  026032  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
2785  026040  001401                          BEQ     40$                     ;OK
2786  026042  005202                          INC     R2                      ;INDICATE ERROR
2787  026044                          40$:
2788  026044  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
2789  026052  001401                          BEQ     50$                     ;OK
2790  026054  005202                          INC     R2                      ;INDICATE ERROR
2791  026056                          50$:
2792  026056  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
2793  026062  001401                          BEQ     60$                     ;OK
2794  026064  005202                          INC     R2                      ;INDICATE ERROR
2795  026066                          60$:
2796  026066  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
```

```
2797  026074  001401                        BEQ     70$                     ;OK
2798  026076  005202                        INC     R2                      ;INDICATE ERROR
2799  026100                        70$:
2800  026100  005702                        TST     R2                      ;ANY ERRORS?
2801  026102  001404                        BEQ     80$                     ;NO
2802          000045                ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2803  026104                        ERRSOFT ENUM,MSRLPFL,ERR5               ;REPORT ERROR
2804  026104  104457                TRAP    C$ERSOFT
2805  026106  000045                .WORD   37
2806  026110  023562                .WORD   MSRLPFL
2807  026112  020102                .WORD   ERR5
2808  026114  004737  013324        80$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
2809  026120                        T2AB:                   ;TEST NXM ADDRESS ERROR USING TRCR BITS 12-13
2810  026120  004737  014066                JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2811  026124  103001                BCC     10$                     ;ON LINE. NO ERROR
2812  026126                        ERROR                           ;REPORT ERROR
2813  026126  104460                TRAP    C$ERROR
2814  026130                        10$:
2815  026130  032777  000040  154106        BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
2816  026136  001006                BNE     15$                     ;SKIP REWIND
2817  026140  004737  012416                JSR     PC,RWIND                ;REWIND
2818  026144  004737  013534                JSR     PC,CHEKI                ;CHECK FOR ERROR
2819  026150  103001                BCC     15$                     ;OK
2820  026152                        ERROR                           ;REPORT ERROR
2821  026152  104460                TRAP    C$ERROR
2822  026154                        15$:                    ;WRITE IDB
2823  026154  004737  012464                JSR     PC,WTIDB                ;WRITE IDB
2824  026160  004737  014254                JSR     PC,CHEKO                ;CHECK TR79 REGISTERS
2825  026164  103001                BCC     20$                     ;NO ERRORS
2826  026166                        ERROR                           ;REPORT ERROR
2827  026166  104460                TRAP    C$ERROR
2828  026170                        20$:
2829  026170  004737  014066                JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
2830  026174  103001                BCC     30$                     ;ON LINE. NO ERROR
2831  026176                        ERROR                           ;REPORT ERROR
2832  026176  104460                TRAP    C$ERROR
2833  026200                        30$:                    ;ERASE
2834  026200  012737  177400  002214        MOV     #-400,USEB              ;SET ERASE COUNT
2835  026206  004737  013140                JSR     PC,ERS                  ;ERASE
2836  026212  004737  017546                JSR     PC,CHEKFX               ;CHECK REGISTERS
2837  026216  103001                BCC     40$                     ;OK
2838  026220                        ERROR                           ;REPORT ERROR
2839  026220  104460                TRAP    C$ERROR
2840  026222                        40$:                    ;WRITE TO NXM ADDRESS
2841  026222  042777  000001  154014        BIC     #BIT0,@TRSR             ;CLEAR INHIBIT BIT
2842  026230  012777  000402  154004        MOV     #WRITE,@TRCR            ;SET COMMAND
2843  026236  052777  030000  153776        BIS     #BIT12!BIT13,@TRCR      ;SET THE EXTENDED ADDRESS BITS
2844  026244  005077  153776                CLR     @TRWC                   ;CLEAR THE WORD COUNT
2845  026250  012777  160000  153772        MOV     #160000,@TRBA           ;SET UP AN I/O PAGE REFERENCE
2846  026256  005277  153760                INC     @TRCR                   ;SET GO BIT
2847  026262  013737  002222  002220        MOV     DLXRW,DLX               ;SPECIFY DELAY MULTIPLIER
2848  026270  004737  013362                JSR     PC,WWAIT                ;WAIT
2849  026274  004737  013254                JSR     PC,CPYTRR               ;COPY TR79 REGISTERS & CLEAR EXPECTED RESULTS
2850  026300  012737  132602  002174        MOV     #132602,ETRCR           ;EXPECTED
2851  026306  012737  006101  002176        MOV     #6101,ETRSR             ;EXPECTED
2852  026314  012737  000002  002202        MOV     #2,ETRBA                ;EXPECTED
```

```
2853  026322  012737  000001  002200          MOV     #1,ETRWC                ;EXPECTED
2854  026330  023737  002174  002164          CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
2855  026336  001401                          BEQ     50$                     ;OK
2856  026340  005202                          INC     R2                      ;INDICATE ERROR
2857  026342                          50$:
2858  026342  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
2859  026350  001401                          BEQ     60$                     ;OK
2860  026352  005202                          INC     R2                      ;INDICATE ERROR
2861  026354                          60$:
2862  026354  033737  002202  002172          BIT     ETRBA,ATRBA             ;TEST BUFFER ADDRESS
2863  026362  001001                          BNE     70$                     ;OK
2864  026364  005202                          INC     R2                      ;INDICATE ERROR
2865  026366                          70$:
2866  026366  023737  002200  002170          CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
2867  026374  001401                          BEQ     80$                     ;OK
2868  026376  005202                          INC     R2                      ;INDICATE ERROR
2869  026400                          80$:
2870  026400  005702                          TST     R2                      ;ANY ERRORS?
2871  026402  001404                          BEQ     90$                     ;NO
2872          000046                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2873  026404                                  ERRSOFT ENUM,MNXMFL,ERR5        ;REPORT ERROR
2874  026404  104457                          TRAP    C$ERSOFT
2875  026406  000046                          .WORD   38
2876  026410  023115                          .WORD   MNXMFL
2877  026412  020102                          .WORD   ERR5
2878  026414                          90$:
2879  026414  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
2880                                                  ;TEST THE BUS ADDRESS BITS BY USING A COUNT PATTERN
2881  026420  005001                  T2AU:   CLR     R1                      ;CLEAR COUNT
2882  026422  010177  153622          10$:    MOV     R1,@TRBA                ;SET BUS ADDRESS
2883  026426  020177  153616                  CMP     R1,@TRBA                ;TEST BUS ADDRESS
2884  026432  001410                          BEQ     20$                     ;OK
2885  026434  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS,CLEAR EXPECTED RESULTS
2886  026440  010137  002202                  MOV     R1,ETRBA                ;EXPECTED
2887          000047                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2888  026444                                  ERRSOFT ENUM,EM6,ERR11          ;REPORT ERROR
2889  026444  104457                          TRAP    C$ERSOFT
2890  026446  000047                          .WORD   39
2891  026450  021630                          .WORD   EM6
2892  026452  020136                          .WORD   ERR11
2893  026454                          20$:
2894  026454  005201                          INC     R1                      ;INCREMENT COUNT
2895  026456  001361                          BNE     10$                     ;CONTINUE
2896
2897  026460                          T2BA:                   ;TEST THE BITS IN THE WORD COUNT USING A COUNT PATTERN
2898  026460  005001                          CLR     R1                      ;CLEAR COUNT
2899  026462  010177  153560          10$:    MOV     R1,@TRWC                ;SET WORD COUNT
2900  026466  020177  153554                  CMP     R1,@TRWC                ;TEST WORD COUNT
2901  026472  001410                          BEQ     20$                     ;OK
2902  026474  004737  013254                  JSR     PC,CPYTRR               ;COPY REGISTERS,CLEAR EXPECTED RESULT
2903  026500  010137  002200                  MOV     R1,ETRWC                ;EXPECTED
2904          000050                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
2905  026504                                  ERRSOFT ENUM,EM7,ERR12          ;REPORT ERROR
2906  026504  104457                          TRAP    C$ERSOFT
2907  026506  000050                          .WORD   40
2908  026510  021551                          .WORD   EM7
```

```
2909  026512  020160                .WORD   ERR12
2910  026514                  20$:
2911  026514  005201                INC     R1                      ;INCREMENT COUNT
2912  026516  001361                BNE     10$                     ;CONTINUE
2913  026520                        ENDTST
2914  026520                  L10022:
2915  026520  104401                TRAP    C$ETST
2916
2917                          .SBTTL  TEST3   CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS
```

```
;////////////////////////////////////////////////////////////////////////
;TEST3  CHECKS IDB AND EOF OPERATIONS
;       CHECKS COUNT AND PARITY ERROR DETECTION
;
;       TEST3 INCLUDES:                          TEST NAME IN CZTRAD
;
;       INSURE WRITE ENABLE RING                   TESTC
;       REWIND THE TAPE                            TESTI
;       WRITE ID BLOCK                             TESTO
;       ILLEGAL ID BLOCK TEST                      TESTH
;       SPACE REVERSE OVER ID BLOCK                TESTAV
;       READ ID BLOCK                              TESTAW
;       WRITE EOF MARKS                            RUNL
;       SPACE REVERSE OVER EOF MARKS               RUNU
;       READ EOF MARKS                             RUNV
;       TIME OUT TEST                              TESTW
;       READ WITH COUNT LONG                       TESTAC
;       READ WITH COUNT SHORT                      TESTAD
;       SPACE REVERSE WITH COUNT SHORT             TESTAE
;       SPACE REVERSE WITH COUNT LONG              TESTAF
;       WRITE EVEN PARITY                          TESTAX
;       SPACE REVERSE OVER EVEN PARITY             TESTAY
;       READ EVEN PARITY                           TESTAZ
;////////////////////////////////////////////////////////////////////////

026522                          BGNTST
026522                  T3::
026522  042777  000100  153512          BIC     #BIT6,@TRCR             ;CLEAR TR79 INTERRUPT ENABLE BIT
026530  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
026534                  T3C:                                    ;CHECK FOR WRITE ENABLE RING
026534  032777  000004  153502          BIT     #FPTS,@TRSR             ;IF WRITE ENABLE RING IS PRESENT
026542  001404                          BEQ     10$                     ;  THEN CONTINUE
        000051          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
026544                                  ERRSOFT ENUM,EM4A,ERR2          ;REPORT ERROR. GET RING INSTALLED
026544  104457                          TRAP    C$ERSOFT
026546  000051                          .WORD   41
026550  021002                          .WORD   EM4A
026552  017744                          .WORD   ERR2
026554                  10$:                                    ;RING IS PRESENT
026554  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
026560  103001                          BCC     20$                     ;NO ERROR
026562                                  ERROR                           ;REPORT ERROR
026562  104460                          TRAP    C$ERROR
026564                  20$:
026564                  T30:                            ;TEST WRITE IDB AT LOAD POINT
026564  032777  000040  153452          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
026572  001010                          BNE     30$                     ;  THEN SKIP PRELIMINARY REWIND
026574  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
026600  004737  012416                  JSR     PC,RWIND                ;REWIND
026604  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
026610  103001                          BCC     30$                     ;OK,NO ERRORS. TAPE AT 'OAD POINT
026612                                  ERROR                           ;REPORT ERROR
```

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```
2974  026612  104460                          TRAP    C$ERROR
2975  026614                          30$:
2976  026614  004737  014066                  JSR     PC,TESTN                ;AT LOAD POINT
2977  026620  103001                          BCC     10$                     ;MAKE SURE TRANSPORT ON LINE AND READY
2978  026622                                  ERROR                           ;NO ERROR
2979  026622  104460                          TRAP    C$ERROR                 ;REPORT ERROR
2980  026624                          10$:
2981  026624  004737  012464                  JSR     PC,WTIDB                ;WRITE IDB
2982  026630  004737  014254                  JSR     PC,CHEKO                ;WRITE IDB
2983  026634  103001                          BCC     20$                     ;CHECK REGISTERS
2984  026636                                  ERROR                           ;OK
2985  026636  104460                          TRAP    C$ERROR                 ;REPORT ERROR
2986  026640                          20$:
2987                                                                          ;ERASE
2988  026640  012737  177400  002214          MOV     #-400,USEB              ;SPECIFY ERASE COUNT
2989  026646  004737  013140                  JSR     PC,ERS                  ;ERASE
2990  026652  004737  017546                  JSR     PC,CHEKFX               ;CHECK REGISTERS
2991  026656  103001                          BCC     40$                     ;OK
2992  026660                                  ERROR                           ;REPORT ERROR
2993  026660  104460                          TRAP    C$ERROR
2994  026662                          40$:
2995  026662                          T3H:                ;TEST WRITE IDB BEYOND LOAD POINT
2996  026662  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
2997  026666  103001                          BCC     10$                     ;NO ERROR
2998  026670                                  ERROR                           ;REPORT ERROR
2999  026670  104460                          TRAP    C$ERROR
3000  026672                          10$:
3001  026672  012737  177700  002214          MOV     #-100,USEB              ;WRITE
3002  026700  004737  012642                  JSR     PC,WRT                  ;SPECIFY WORD COUNT FOR WRITE
3003  026704  004737  017156                  JSR     PC,CHEKCX               ;WRITE
3004  026710  103001                          BCC     30$                     ;CHECK TR79 REGISTERS
3005  026712                                  ERROR                           ;OK
3006  026712  104460                          TRAP    C$ERROR                 ;REPORT ERROR
3007  026714                          30$:
3008  026714  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3009  026720  103001                          BCC     40$                     ;NO ERROR
3010  026722                                  ERROR                           ;REPORT ERROR
3011  026722  104460                          TRAP    C$ERROR
3012  026724                          40$:                ;WRITE IDB BEYOND LOAD POINT
3013  026724  004737  012464                  JSR     PC,WTIDB                ;WRITE IDB
3014  026730  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
3015  026734  012737  142632  002174          MOV     #142632,ETRCR           ;EXPECTED
3016  026742  012737  002000  002176          MOV     #2000,ETRSR             ;EXPECTED
3017  026750  023737  002174  002164          CMP     ETRCR,ATRCR             ;CHECK COMMAND REGISTER
3018  026756  001401                          BEQ     50$                     ;OK
3019  026760  005202                          INC     R2                      ;INDICATE ERROR
3020  026762                          50$:
3021  026762  023737  002176  002166          CMP     ETRSR,ATRSR             ;CHECK STATUS REGISTER
3022  026770  001401                          BEQ     60$                     ;OK
3023  026772  005202                          INC     R2                      ;INDICATE ERROR
3024  026774                          60$:
3025  026774  005702                          TST     R2                      ;ANY ERRORS?
3026  026776  001404                          BEQ     70$                     ;NO
3027          000052          ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR COUNT
3028  027000                                  ERRSOFT ENUM,MWIPLFL,ERR4       ;REPORT ERROR
3029  027000  104457                          TRAP    C$ERSOFT
```

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CZTRAC.P11    30-DEC-81 11:08          TEST3   CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

 3030  027002  000052                          .WORD   42
 3031  027004  022245                          .WORD   MWIPLFL
 3032  027006  020064                          .WORD   ERR4
 3033  027010  004737  013324          70$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
 3034  027014                          T3AV:                   ;TEST SPACE REVERSE OVER IDB
 3035  027014  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3036  027020  103001                          BCC     10$                     ;NO ERROR
 3037  027022                                  ERROR                           ;REPORT ERROR
 3038  027022  104460                          TRAP    C$ERROR
 3039  027024                          10$:                    ;ON LINE AND READY
 3040  027024  032777  000040  153212          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
 3041  027032  001006                          BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
 3042  027034  004737  012416                  JSR     PC,RWIND                ;REWIND
 3043  027040  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
 3044  027044  103001                          BCC     20$                     ;OK,NO ERRORS. TAPE AT LOAD POINT
 3045  027046                                  ERROR                           ;REPORT ERROR
 3046  027046  104460                          TRAP    C$ERROR
 3047  027050                          20$:                    ;AT LOAD POINT
 3048  027050  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3049  027054  103001                          BCC     30$                     ;NO ERROR
 3050  027056                                  ERROR                           ;REPORT ERROR
 3051  027056  104460                          TRAP    C$ERROR
 3052  027060                          30$:                    ;WRITE IDB
 3053  027060  004737  012464                  JSR     PC,WTIDB                ;WRITE IDB
 3054  027064  004737  014254                  JSR     PC,CHEKO                ;CHECK REGISTERS
 3055  027070  103001                          BCC     40$                     ;OK
 3056  027072                                  ERROR                           ;REPORT ERROR
 3057  027072  104460                          TRAP    C$ERROR
 3058  027074                          40$:                    ;SPACE REVERSE OVER IDB
 3059  027074  012737  177777  002214          MOV     #-1,USEB                ;SPECIFY WORD COUNT
 3060  027102  004737  013024                  JSR     PC,SPR                  ;SPACE REVERSE
 3061  027106  013737  002222  002220          MOV     DLXRW,DLX               ;SPECIFY DELAU MULTIPLIER
 3062  027114  004737  013362                  JSR     PC,WWAIT                ;WAIT
 3063  027120  004737  016122                  JSR     PC,CHEKAV               ;CHECK REGISTERS
 3064  027124  103001                          BCC     50$                     ;OK
 3065  027126                                  ERROR                           ;REPORT ERROR
 3066  027126  104460                          TRAP    C$ERROR
 3067  027130                          50$:
 3068  027130                          T3AW:                   ;TEST READ IDB
 3069  027130  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3070  027134  103001                          BCC     10$                     ;NO ERROR
 3071  027136                                  ERROR                           ;REPORT ERROR
 3072  027136  104460                          TRAP    C$ERROR
 3073  027140                          10$:                    ;ON LINE AND READY
 3074  027140  032777  000040  153076          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
 3075  027146  001006                          BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
 3076  027150  004737  012416                  JSR     PC,RWIND                ;REWIND
 3077  027154  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
 3078  027160  103001                          BCC     20$                     ;OK,NO ERRORS. TAPE AT LOAD POINT
 3079  027162                                  ERROR                           ;REPORT ERROR
 3080  027162  104460                          TRAP    C$ERROR
 3081  027164                          20$:                    ;AT LOAD POINT
 3082  027164  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3083  027170  103001                          BCC     30$                     ;NO ERROR
 3084  027172                                  ERROR                           ;REPORT ERROR
 3085  027172  104460                          TRAP    C$ERROR
```

```
3086  027174                                  30$:                            ;READ IDB
3087  027174  005037  006322                          CLR     INPUT                   ;CLEAR INPUT WORD
3088  027200  012737  177777  002214                  MOV     #-1,USEB                ;SPECIFY COUNT FOR READ
3089  027206  004737  012756                          JSR     PC,RD                   ;READ
3090  027212  004737  016262                          JSR     PC,CHEKAW               ;CHECK REGISTERS
3091  027216  103001                                  BCC     40$                     ;OK
3092  027220                                          ERROR                           ;REPORT ERROR
3093  027220  104460                                  TRAP    C$ERROR
3094  027222                                  40$:
3095  027222                                  T3L:                    ;TEST WRITE EOF(TAPE MARK)
3096  027222  004737  013324                          JSR     PC,CPWR                 ;RESET TR79
3097  027226  004737  014066                          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3098  027232  103001                                  BCC     10$                     ;NO ERROR
3099  027234                                          ERROR                           ;REPORT ERROR
3100  027234  104460                                  TRAP    C$ERROR
3101  027236                                  10$:                            ;ON LINE AND READY
3102  027236  032777  000040  153000                  BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3103  027244  001006                                  BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3104  027246  004737  012416                          JSR     PC,RWIND                ;REWIND
3105  027252  004737  013534                          JSR     PC,CHEKI                ;CHECK REGISTERS
3106  027256  103001                                  BCC     20$                     ;OK.NO ERRORS. TAPE AT LOAD POINT
3107  027260                                          ERROR                           ;REPORT ERROR
3108  027260  104460                                  TRAP    C$ERROR
3109  027262                                  20$:                            ;AT LOAD POINT
3110  027262  004737  014066                          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3111  027266  103001                                  BCC     30$                     ;NO ERROR
3112  027270                                          ERROR                           ;REPORT ERROR
3113  027270  104460                                  TRAP    C$ERROR
3114  027272                                  30$:                            ;WRITE IDB
3115  027272  004737  012464                          JSR     PC,WTIDB                ;WRITE IDB
3116  027276  004737  014254                          JSR     PC,CHEKO                ;CHECK REGISTERS
3117  027302  103001                                  BCC     40$                     ;OK
3118  027304                                          ERROR                           ;REPORT ERROR
3119  027304  104460                                  TRAP    C$ERROR
3120  027306                                  40$:                            ;ERASE
3121  027306  012737  177400  002214                  MOV     #-400,USEB              ;SPECIFY ERASE COUNT
3122  027314  004737  013140                          JSR     PC,ERS                  ;ERASE
3123  027320  004737  017546                          JSR     PC,CHEKFX               ;CHECK REGISTERS
3124  027324  103001                                  BCC     50$                     ;OK
3125  027326                                          ERROR                           ;REPORT ERROR
3126  027326  104460                                  TRAP    C$ERROR
3127  027330                                  50$:                            ;WRITE EOF(TAPE MARK)
3128  027330  004737  013072                          JSR     PC,WTEOF                ;WRITE EOF
3129  027334  004737  013756                          JSR     PC,CHEKL                ;CHECK REGISTERS
3130  027340  103001                                  BCC     60$                     ;OK
3131  027342                                          ERROR                           ;REPORT ERROR
3132  027342  104460                                  TRAP    C$ERROR
3133  027344                                  60$:
3134  027344                                  T3U:                    ;TEST SPACE REVERSE OVER EOF
3135  027344  004737  014066                          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3136  027350  103001                                  BCC     10$                     ;NO ERROR
3137  027352                                          ERROR                           ;REPORT ERROR
3138  027352  104460                                  TRAP    C$ERROR
3139  027354                                  10$:
3140  027354  005037  002214                          CLR     USEB                    ;SPECIFY COUNT
3141  027360  004737  013024                          JSR     PC,SPR                  ;SPACE REVERSE
```

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```
3142  027364  004737  014506          JSR     PC,CHEKU                ;CHECK REGISTERS
3143  027370  103001                  BCC     20$                     ;OK
3144  027372                          ERROR                           ;REPORT ERROR
3145  027372  104460                  TRAP    C$ERROR
3146  027374                  20$:
3147  027374                  T3V:                    ;TEST READ EOF
3148  027374  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3149  027400  103001                  BCC     10$                     ;NO ERROR
3150  027402                          ERROR                           ;REPORT ERROR
3151  027402  104460                  TRAP    C$ERROR
3152  027404                  10$:
3153  027404  005037  002214          CLR     USEB                    ;SPECIFY COUNT FOR READ
3154  027410  004737  012756          JSR     PC,RD                   ;READ
3155  027414  004737  014636          JSR     PC,CHEKV                ;CHECK REGISTERS
3156  027420  103001                  BCC     20$                     ;OK
3157  027422                          ERROR                           ;REPORT ERROR
3158  027422  104460                  TRAP    C$ERROR
3159  027424                  20$:
3160  027424                  T3W:                    ;TEST TIMEOUT WHILE WRITING
3161  027424  004737  013324          JSR     PC,CPWR                 ;RESET TR79
3162  027430  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3163  027434  103001                  BCC     10$                     ;NO ERROR
3164  027436                          ERROR                           ;REPORT ERROR
3165  027436  104460                  TRAP    C$ERROR
3166  027440                  10$:                    ;ON LINE AND READY
3167  027440  032777  000040  152576  BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3168  027446  001006                  BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3169  027450  004737  012416          JSR     PC,RWIND                ;REWIND
3170  027454  004737  013534          JSR     PC,CHEKI                ;CHECK REGISTERS
3171  027460  103001                  BCC     20$                     ;OK,NO ERRORS. TAPE AT LOAD POINT
3172  027462                          ERROR                           ;REPORT ERROR
3173  027462  104460                  TRAP    C$ERROR
3174  027464                  20$:                    ;AT LOAD POINT
3175  027464  004737  014066          JSR     PC,TESTN                ;MAKE SURF TRANSPORT ON LINE AND READY
3176  027470  103001                  BCC     30$                     ;NO ERROR
3177  027472                          ERROR                           ;REPORT ERROR
3178  027472  104460                  TRAP    C$ERROR
3179  027474                  30$.                    ;WRITE IDB
3180  027474  004737  012464          JSR     PC,WTIDB                ;WRITE IDB
3181  027500  004737  014254          JSR     PC,CHEKO                ;CHECK REGISTERS
3182  027504  103001                  BCC     40$                     ;OK
3183  027506                          ERROR                           ;REPORT ERROR
3184  027506  104460                  TRAP    C$ERROR
3185  027510                  40$:                    ;ERASE
3186  027510  012737  177400  002214  MOV     #-400,USEB              ;SPECIFY ERASE COUNT
3187  027516  004737  013140          JSR     PC,ERS                  ;ERASE
3188  027522  004737  017546          JSR     PC,CHEKFX               ;CHECK REGISTERS
3189  027526  103001                  BCC     50$                     ;OK
3190  027530                          ERROR                           ;REPORT ERROR
3191  027530  104460                  TRAP    C$ERROR
3192  027532                  50$:                    ;FORCE WRITE FOR LONGER THAN 1.5 SEC
3193  027532  013702  002232          MOV     DLXLNG,R2               ;SPECIFY DELAY MULTIPLIER
3194  027536  005001                  CLR     R1                      ;SPECIFY DELAY  CONSTANT
3195  027540  042777  000001  152476  BIC     #BIT0,@TRSR             ;CLEAR TR79 INHIBIT BIT
3196  027546  005077  152474          CLR     @TRWC                   ;SPECIFY MAXIMUM WORD COUNT
3197  027552  012777  002262  152470  MOV     #OUTPUT,@TRBA           ;SPECIFY BUS ADDRESS
```

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```
3198  027560  012777  000402  152454          MOV     #WRITE,@TRCR            ;SPECIFY WRITE OPERATION
3199  027566  052777  000001  152446          BIS     #BIT0,@TRCR             ;SET TR79 GO BIT
3200  027574                                60$:
3201  027574  005077  152446                  CLR     @TRWC                   ;RESET COUNT
3202  027600  012777  002262  152442          MOV     #OUTPUT,@TRBA           ;RESET BUS ADDRESS
3203  027606  005201                          INC     R1                      ;COUNT A TICK
3204  027610  001371                          BNE     60$                     ;  KEEP TICKING
3205  027612  005302                          DEC     R2                      ;COUNT DOWN MULTIPLIER
3206  027614  001367                          BNE     60$                     ;KEEP TICKING
3207  027616  004737  013254                  JSR     PC,CPYTR                ;COPY TR79 REGISTERS
3208  027622  012737  102602  002174          MOV     #102602,ETRCR           ;EXPECTED
3209  027630  012737  002401  002176          MOV     #2401,ETRSR             ;EXPECTED
3210  027636  012737  002262  002202          MOV     #OUTPUT,ETRBA           ;EXPECTED
3211  027644  023737  002174  002164          CMP     ETRCR,ATRCR             ;CHECK COMMAND REGISTER
3212  027652  001401                          BEQ     70$                     ;OK
3213  027654  005202                          INC     R2                      ;INDICATE ERROR
3214  027656                                70$:
3215  027656  042737  170000  002166          BIC     #170000,ATRSR           ;CLEAR UNWANTED BITS
3216  027664  023737  002176  002166          CMP     ETRSR,ATRSR             ;CHECK STATUS
3217  027672  001401                          BEQ     80$                     ;OK
3218  027674  005202                          INC     R2                      ;INDICATE ERROR
3219  027676                                80$:
3220  027676  023737  002202  002172          CMP     ETRBA,ATRBA             ;CHECK BUS ADDRESS
3221  027704  001401                          BEQ     90$                     ;OK
3222  027706  005202                          INC     R2                      ;INDICATE ERROR
3223  027710                                90$:
3224  027710  005737  002170                  TST     ATRWC                   ;CHECK COUNT
3225  027714  001401                          BEQ     100$                    ;OK
3226  027716  005202                          INC     R2                      ;INDICATE ERROR
3227  027720                                100$:
3228  027720  005702                          TST     R2                      ;ANY ERRORS?
3229  027722  001404                          BEQ     110$                    ;NO
3230          000053                  ENUM =  ^D<ENUM + 1>                    ;INCREMENT ERROR COUNT
3231  027724                                ERRSOFT ENUM,MWTOFL,ERR5            ;REPORT ERROR
3232  027724  104457                        TRAP    C$ERSOFT
3233  027726  000053                        .WORD   43
3234  027730  022751                        .WORD   MWTOFL
3235  027732  020102                        .WORD   ERR5
3236  027734                                110$:
3237  027734  004737  013324                JSR     PC,CPWR                 ;RESET TR79
3238
3239
3240  027740                                T3AC:                   ;TEST READ COUNT ERROR. COUNT TOO LARGE
3241  027740  004737  013324                JSR     PC,CPWR                 ;RESET TR79
3242  027744  004737  014066                JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3243  027750  103001                        BCC     10$                     ;NO ERROR
3244  027752                                ERROR                           ;REPORT ERROR
3245  027752  104460                        TRAP    C$ERROR
3246  027754                                10$:                    ;ON LINE AND READY
3247  027754  032777  000040  152262          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3248  027762  001006                          BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3249  027764  004737  012416                JSR     PC,RWIND                ;REWIND
3250  027770  004737  013534                JSR     PC,CHEKI                ;CHECK REGISTERS
3251  027774  103001                        BCC     20$                     ;OK,NO ERRORS. TAPE AT LOAD POINT
3252  027776                                ERROR                           ;REPORT ERROR
3253  027776  104460                        TRAP    C$ERROR
```

```
3254  030000
3255  030000  004737  014066          20$:                    ;AT LOAD POINT
3256  030004  103001                        JSR     PC,TESTN        ;MAKE SURE TRANSPORT ON LINE AND READY
3257  030006                                BCC     30$             ;NO ERROR
3258  030006  104460                       ERROR                   ;REPORT ERROR
3259  030010                                TRAP    C$ERROR
3260  030010  004737  012464          30$:                    ;WRITE IDB
3261  030014  004737  014254                JSR     PC,WTIDB        ;WRITE IDB
3262  030020  103001                        JSR     PC,CHEKO        ;CHECK REGISTERS
3263  030022                                BCC     40$             ;OK
3264  030022  104460                       ERROR                   ;REPORT ERROR
3265  030024                                TRAP    C$ERROR
3266  030024  004737  014066          40$:                    ;ERASE
3267  030030  103001                        JSR     PC,TESTN        ;MAKE SURE TRANSPORT ON LINE AND READY
3268  030032                                BCC     45$             ;NO ERROR
3269  030032  104460                       ERROR                   ;REPORT ERROR
3270  030034                                TRAP    C$ERROR
3271  030034  012737  177400  002214  45$:
3272  030042  004737  013140                MOV     #-400,USEB      ;SPECIFY ERASE COUNT
3273  030046  004737  017546                JSR     PC,ERS          ;ERASE
3274  030052  103001                        JSR     PC,CHEKFX       ;CHECK REGISTERS
3275  030054                                BCC     50$             ;OK
3276  030054  104460                       ERROR                   ;REPORT ERROR
3277  030056                                TRAP    C$ERROR
3278  030056  004737  014066          50$:                    ;WRITE
3279  030062  103001                        JSR     PC,TESTN        ;MAKE SURE TRANSPORT ON LINE AND READY
3280  030064                                BCC     55$             ;NO ERROR
3281  030064  104460                       ERROR                   ;REPORT ERROR
3282  030066                                TRAP    C$ERROR
3283  030066  012737  177700  002214  55$:
3284  030074  004737  012642                MOV     #-100,USEB      ;SPECIFY COUNT FOR WRITE
3285  030100  004737  017156                JSR     PC,WRT          ;WRITE
3286  030104  103001          60$:          JSR     PC,CHEKCX       ;CHECK REGISTERS
3287  030106                                BCC     70$             ;OK
3288  030106  104460                       ERROR                   ;REPORT ERROR
3289  030110                                TRAP    C$ERROR
3290  030110  004737  014066          70$:                    ;SPACE REVERSE
3291  030114  103001                        JSR     PC,TESTN        ;MAKE SURE TRANSPORT ON LINE AND READY
3292  030116                                BCC     75$             ;NO ERROR
3293  030116  104460                       ERROR                   ;REPORT ERROR
3294  030120                                TRAP    C$ERROR
3295  030120  004737  013024          75$:
3296  030124  004737  017416                JSR     PC,SPR          ;SPACE REVERSE
3297  030130  103001                        JSR     PC,CHEKEX       ;CHECK REGISTERS
3298  030132                                BCC     80$             ;OK
3299  030132  104460                       ERROR                   ;REPORT ERROR
3300  030134                                TRAP    C$ERROR
3301  030134  004737  014066          80$:                    ;READ WITH LONG COUNT
3302  030140  103001                        JSR     PC,TESTN        ;MAKE SURE TRANSPORT ON LINE AND READY
3303  030142                                BCC     85$             ;NO ERROR
3304  030142  104460                       ERROR                   ;REPORT ERROR
3305  030144                                TRAP    C$ERROR
3306  030144  012737  177701  002214  85$:
3307  030152  004737  012756                MOV     #-77,USEB       ;SPECIFY COUNT
3308  030156  004737  014776                JSR     PC,RD           ;READ
3309  030162  103001                        JSR     PC,CHEKAC       ;CHECK REGISTERS
                                            BCC     90$             ;OK
```

```
3310  030164                                        ERROR                           ;REPORT ERROR
3311  030164  104460                               TRAP    C$ERROR
3312  030166                                90$:
3313
3314
3315
3316  030166                                T3AD:                   ;TEST READ COUNT ERROR. COUNT TOO SMALL
3317  030166  004737  013324                        JSR     PC,CPWR                 ;RESET TR79
3318  030172  004737  014066                        JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3319  030176  103001                                BCC     10$                     ;NO ERROR
3320  030200                                        ERROR                           ;REPORT ERROR
3321  030200  104460                               TRAP    C$ERROR
3322  030202                                10$:                    ;ON LINE AND READY
3323  030202  032777  000040  152034                BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3324  030210  001006                                BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3325  030212  004737  012416                        JSR     PC,RWIND                ;REWIND
3326  030216  004737  013534                        JSR     PC,CHEKI                ;CHECK REGISTERS
3327  030222  103001                                BCC     20$                     ;OK.NO ERRORS. TAPE AT LOAD POINT
3328  030224                                        ERROR                           ;REPORT ERROR
3329  030224  104460                               TRAP    C$ERROR
3330  030226                                20$:                    ;AT LOAD POINT
3331  030226  004737  014066                        JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3332  030232  103001                                BCC     30$                     ;NO ERROR
3333  030234                                        ERROR                           ;REPORT ERROR
3334  030234  104460                               TRAP    C$ERROR
3335  030236                                30$:                    ;WRITE IDB
3336  030236  004737  012464                        JSR     PC,WTIDB                ;WRITE IDB
3337  030242  004737  014254                        JSR     PC,CHEKO                ;CHECK REGISTERS
3338  030246  103001                                BCC     40$                     ;OK
3339  030250                                        ERROR                           ;REPORT ERROR
3340  030250  104460                               TRAP    C$ERROR
3341  030252                                40$:                    ;ERASE
3342  030252  004737  014066                        JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3343  030256  103001                                BCC     45$                     ;NO ERROR
3344  030260                                        ERROR                           ;REPORT ERROR
3345  030260  104460                               TRAP    C$ERROR
3346  030262                                45$:
3347  030262  012737  177400  002214                MOV     #-400,USEB              ;SPECIFY ERASE COUNT
3348  030270  004737  013140                        JSR     PC,ERS                  ;ERASE
3349  030274  004737  017546                        JSR     PC,CHEKFX               ;CHECK REGISTERS
3350  030300  103001                                BCC     50$                     ;OK
3351  030302                                        ERROR                           ;REPORT ERROR
3352  030302  104460                               TRAP    C$ERROR
3353  030304                                50$:                    ;WRITE
3354  030304  004737  014066                        JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3355  030310  103001                                BCC     55$                     ;NO ERROR
3356  030312                                        ERROR                           ;REPORT ERROR
3357  030312  104460                               TRAP    C$ERROR
3358  030314                                55$:
3359  030314  012737  177700  002214                MOV     #-100,USEB              ;SPECIFY COUNT FOR WRITE
3360  030322  004737  012642                        JSR     PC,WRT                  ;WRITE
3361  030326  004737  017156                60$:    JSR     PC,CHEKCX               ;CHECK REGISTERS
3362  030332  103001                                BCC     70$                     ;OK
3363  030334                                        ERROR                           ;REPORT ERROR
3364  030334  104460                               TRAP    C$ERROR
3365  030336                                70$:                    ;SPACE REVERSE
```

```
3366  030336  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3367  030342  103001                  BCC     75$                     ;NO ERROR
3368  030344                          ERROR                           ;REPORT ERROR
3369  030344  104460                  TRAP    C$ERROR
3370  030346                  75$:
3371  030346  004737  013024          JSR     PC,SPR                  ;SPACE REVERSE
3372  030352  004737  017416          JSR     PC,CHEKEX               ;CHECK REGISTERS
3373  030356  103001                  BCC     80$                     ;OK
3374  030360                          ERROR                           ;REPORT ERROR
3375  030360  104460                  TRAP    C$ERROR
3376  030362                  80$:                    ;READ WITH SHORT COUNT
3377  030362  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3378  030366  103001                  BCC     85$                     ;NO ERROR
3379  030370                          ERROR                           ;REPORT ERROR
3380  030370  104460                  TRAP    C$ERROR
3381  030372                  85$:
3382  030372  012737  177677  002214  MOV     #-101,USEB              ;SPECIFY COUNT
3383  030400  004737  012756          JSR     PC,RD                   ;READ
3384  030404  004737  015142          JSR     PC,CHEKAD               ;CHECK REGISTERS
3385  030410  103001                  BCC     90$                     ;OK
3386  030412                          ERROR                           ;REPORT ERROR
3387  030412  104460                  TRAP    C$ERROR
3388  030414                  90$:
3389
3390
3391
3392  030414                  T3AE:                   ;TEST SPACE REVERSE COUNT ERROR. SHORT COUNT
3393  030414  004737  013324          JSR     PC,CPWR                 ;RESET TR79
3394  030420  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3395  030424  103001                  BCC     10$                     ;NO ERROR
3396  030426                          ERROR                           ;REPORT ERROR
3397  030426  104460                  TRAP    C$ERROR
3398  030430                  10$:                    ;ON LINE AND READY
3399  030430  032777  000040  151606  BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3400  030436  001006                  BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3401  030440  004737  012416          JSR     PC,RWIND                ;REWIND
3402  030444  004737  013534          JSR     PC,CHEKI                ;CHECK REGISTERS
3403  030450  103001                  BCC     20$                     ;OK.NO ERRORS. TAPE AT LOAD POINT
3404  030452                          ERROR                           ;REPORT ERROR
3405  030452  104460                  TRAP    C$ERROR
3406  030454                  20$:                    ;AT LOAD POINT
3407  030454  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3408  030460  103001                  BCC     30$                     ;NO ERROR
3409  030462                          ERROR                           ;REPORT ERROR
3410  030462  104460                  TRAP    C$ERROR
3411  030464                  30$:                    ;WRITE IDB
3412  030464  004737  012464          JSR     PC,WTIDB                ;WRITE IDB
3413  030470  004737  014254          JSR     PC,CHEKO                ;CHECK REGISTERS
3414  030474  103001                  BCC     40$                     ;OK
3415  030476                          ERROR                           ;REPORT ERROR
3416  030476  104460                  TRAP    C$ERROR
3417  030500                  40$:                    ;ERASE
3418  030500  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3419  030504  103001                  BCC     45$                     ;NO ERROR
3420  030506                          ERROR                           ;REPORT ERROR
3421  030506  104460                  TRAP    C$ERROR
```

```
CZTRAC.P11    30-DEC-81 11:08          TEST3   CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

 3422  030510                          45$:
 3423  030510  012737  177400  002214          MOV     #-400,USEB              ;SPECIFY ERASE COUNT
 3424  030516  004737  013140                  JSR     PC,ERS                  ;ERASE
 3425  030522  004737  017546                  JSR     PC,CHEKFX               ;CHECK REGISTERS
 3426  030526  103001                          BCC     50$                     ;OK
 3427  030530                                  ERROR                           ;REPORT ERROR
 3428  030530  104460                          TRAP    C$ERROR
 3429  030532                          50$:                    ;WRITE
 3430  030532  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3431  030536  103001                          BCC     55$                     ;NO ERROR
 3432  030540                                  ERROR                           ;REPORT ERROR
 3433  030540  104460                          TRAP    C$ERROR
 3434  030542                          55$:
 3435  030542  012737  177700  002214          MOV     #-100,USEB              ;SPECIFY COUNT FOR WRITE
 3436  030550  004737  012642                  JSR     PC,WRT                  ;WRITE
 3437  030554  004737  017156          60$:    JSR     PC,CHEKCX               ;CHECK REGISTERS
 3438  030560  103001                          BCC     70$                     ;OK
 3439  030562                                  ERROR                           ;REPORT ERROR
 3440  030562  104460                          TRAP    C$ERROR
 3441  030564                          70$:            ;SPACE REVERSE WITH SHORT COUNT
 3442  030564  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3443  030570  103001                          BCC     75$                     ;NO ERROR
 3444  030572                                  ERROR                           ;REPORT ERROR
 3445  030572  104460                          TRAP    C$ERROR
 3446  030574                          75$:
 3447  030574  012737  177701  002214          MOV     #-77,USEB               ;SPECIFY COUNT
 3448  030602  004737  013024                  JSR     PC,SPR                  ;SPACE REVERSE
 3449  030606  004737  015316                  JSR     PC,CHEKAE               ;CHECK REGISTERS
 3450  030612  103001                          BCC     80$                     ;OK
 3451  030614                                  ERROR                           ;REPORT ERROR
 3452  030614  104460                          TRAP    C$ERROR
 3453  030616                          80$:
 3454
 3455
 3456
 3457  030616                          T3AF:           ;TEST SPACE REVERSE COUNT ERROR. COUNT TOO LARGE
 3458  030616  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
 3459  030622  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3460  030626  103001                          BCC     10$                     ;NO ERROR
 3461  030630                                  ERROR                           ;REPORT ERROR
 3462  030630  104460                          TRAP    C$ERROR
 3463  030632                          10$:            ;ON LINE AND READY
 3464  030632  032777  000040  151404          BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
 3465  030640  001006                          BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
 3466  030642  004737  012416                  JSR     PC,RWIND                ;REWIND
 3467  030646  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
 3468  030652  103001                          BCC     20$                     ;OK.NO ERRORS. TAPE AT LOAD POINT
 3469  030654                                  ERROR                           ;REPORT ERROR
 3470  030654  104460                          TRAP    C$ERROR
 3471  030656                          20$:            ;AT LOAD POINT
 3472  030656  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3473  030662  103001                          BCC     30$                     ;NO ERROR
 3474  030664                                  ERROR                           ;REPORT ERROR
 3475  030664  104460                          TRAP    C$ERROR
 3476  030666                          30$:            ;WRITE IDB
 3477  030666  004737  012464                  JSR     PC,WTIDB                ;WRITE IDB
```

CZTRAC.P11 30-DEC-81 11:08 TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

```
3478  030672  004737  014254          JSR     PC,CHEKO                ;CHECK REGISTERS
3479  030676  103001                  BCC     40$                     ;OK
3480  030700                          ERROR                           ;REPORT ERROR
3481  030700  104460                  TRAP    C$ERROR
3482  030702                  40$:                    ;ERASE
3483  030702  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3484  030706  103001                  BCC     45$                     ;NO ERROR
3485  030710                          ERROR                           ;REPORT ERROR
3486  030710  104460                  TRAP    C$ERROR
3487  030712                  45$:
3488  030712  012737  177400  002214  MOV     #-400,USEB              ;SPECIFY ERASE COUNT
3489  030720  004737  013140          JSR     PC,ERS                  ;ERASE
3490  030724  004737  017546          JSR     PC,CHEKFX               ;CHECK REGISTERS
3491  030730  103001                  BCC     50$                     ;OK
3492  030732                          ERROR                           ;REPORT ERROR
3493  030732  104460                  TRAP    C$ERROR
3494  030734                  50$:                    ;WRITE
3495  030734  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3496  030740  103001                  BCC     55$                     ;NO ERROR
3497  030742                          ERROR                           ;REPORT ERROR
3498  030742  104460                  TRAP    C$ERROR
3499  030744                  55$:
3500  030744  012737  177700  002214  MOV     #-100,USEB              ;SPECIFY COUNT FOR WRITE
3501  030752  004737  012642          JSR     PC,WRT                  ;WRITE
3502  030756  004737  017156  60$:    JSR     PC,CHEKCX               ;CHECK REGISTERS
3503  030762  103001                  BCC     70$                     ;OK
3504  030764                          ERROR                           ;REPORT ERROR
3505  030764  104460                  TRAP    C$ERROR
3506  030766                  70$:                    ;SPACE REVERSE WITH LONG COUNT
3507  030766  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3508  030772  103001                  BCC     75$                     ;NO ERROR
3509  030774                          ERROR                           ;REPORT ERROR
3510  030774  104460                  TRAP    C$ERROR
3511  030776                  75$:
3512  030776  012737  177677  002214  MOV     #-101,USEB              ;SPECIFY COUNT
3513  031004  004737  013024          JSR     PC,SPR                  ;SPACE REVERSE
3514  031010  004737  015462          JSR     PC,CHEKAF               ;CHECK REGISTERS
3515  031014  103001                  BCC     80$                     ;OK
3516  031016                          ERROR                           ;REPORT ERROR
3517  031016  104460                  TRAP    C$ERROR
3518  031020                  80$:
3519
3520
3521  031020                  T3AX:           ;TEST OPERATIONS WITH EVEN PARITY DATA
3522  031020  004737  013324          JSR     PC,CPWR                 ;RESET TR79
3523  031024  004737  014066          JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3524  031030  103001                  BCC     10$                     ;NO ERROR
3525  031032                          ERROR                           ;REPORT ERROR
3526  031032  104460                  TRAP    C$ERROR
3527  031034                  10$:                    ;ON LINE AND READY
3528  031034  032777  000040  151202  BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3529  031042  001006                  BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3530  031044  004737  012416          JSR     PC,RWIND                ;REWIND
3531  031050  004737  013534          JSR     PC,CHEKI                ;CHECK REGISTERS
3532  031054  103001                  BCC     20$                     ;OK.NO ERRORS. TAPE AT LOAD POINT
3533  031056                          ERROR                           ;REPORT ERROR
```

```
CZTRAC.P11    30-DEC-81 11:08          TEST3   CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

 3534  031056  104460                          TRAP    C$ERROR
 3535  031060                          20$:
 3536  031060  004737  014066                  JSR     PC,TESTN                ;AT LOAD POINT
 3537  031064  103001                          BCC     30$                     ;MAKE SURE TRANSPORT ON LINE AND READY
 3538  031066                                  ERROR                           ;NO ERROR
 3539  031066  104460                          TRAP    C$ERROR                 ;REPORT ERROR
 3540  031070                          30$:
 3541  031070  004737  012464                  JSR     PC,WTIDB                ;WRITE IDB
 3542  031074  004737  014254                  JSR     PC,CHEKO                ;WRITE IDB
 3543  031100  103001                          BCC     40$                     ;CHECK REGISTERS
 3544  031102                                  ERROR                           ;OK
 3545  031102  104460                          TRAP    C$ERROR                 ;REPORT ERROR
 3546  031104                          40$:
 3547  031104  004737  014066                  JSR     PC,TESTN                ;ERASE
 3548  031110  103001                          BCC     45$                     ;MAKE SURE TRANSPORT ON LINE AND READY
 3549  031112                                  ERROR                           ;NO ERROR
 3550  031112  104460                          TRAP    C$ERROR                 ;REPORT ERROR
 3551  031114                          45$:
 3552  031114  012737  177400  002214          MOV     #-400,USEB              ;SPECIFY ERASE COUNT
 3553  031122  004737  013140                  JSR     PC,ERS                  ;ERASE
 3554  031126  004737  017546                  JSR     PC,CHEKFX               ;CHECK REGISTERS
 3555  031132  103001                          BCC     50$                     ;OK
 3556  031134                                  ERROR                           ;REPORT ERROR
 3557  031134  104460                          TRAP    C$ERROR
 3558  031136                          50$:
 3559  031136  004737  014066                  JSR     PC,TESTN                ;WRITE DATA WITH EVEN PARITY
 3560  031142  103001                          BCC     55$                     ;MAKE SURE TRANSPORT ON LINE AND READY
 3561  031144                                  ERROR                           ;NO ERROR
 3562  031144  104460                          TRAP    C$ERROR                 ;REPORT ERROR
 3563  031146                          55$:
 3564  031146  012737  177700  002214          MOV     #-100,USEB              ;SPECIFY COUNT
 3565  031154  012737  002256  002216          MOV     #BADOUT,USEC            ;SPECIFY DATA ADDRESS
 3566  031162  004737  012710                  JSR     PC,WRTC                 ;WRITE
 3567  031166  004737  016460                  JSR     PC,CHEKAX               ;CHECK REGISTERS
 3568  031172  103001                          BCC     60$                     ;OK
 3569  031174                                  ERROR                           ;REPORT ERROR
 3570  031174  104460                          TRAP    C$ERROR
 3571  031176                          60$:
 3572  031176                          T3AY:                   ;SPACE REVERSE OVER EVEN PARITY DATA
 3573  031176  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
 3574  031202  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3575  031206  103001                          BCC     10$                     ;NO ERROR
 3576  031210                                  ERROR                           ;REPORT ERROR
 3577  031210  104460                          TRAP    C$ERROR
 3578  031212                          10$:                    ;ON LINE AND READY
 3579  031212  012737  177700  002214          MOV     #-100,USEB              ;SPECIFY COUNT
 3580  031220  004737  013024                  JSR     PC,SPR                  ;SPACE REVERSE
 3581  031224  004737  016636                  JSR     PC,CHEKAY               ;CHECK REGISTERS
 3582  031230  103001                          BCC     70$                     ;OK
 3583  031232                                  ERROR                           ;REPORT ERROR
 3584  031232  104460                          TRAP    C$ERROR
 3585  031234                          70$:
 3586  031234                          T3AZ:                   ;TEST READ EVEN PARITY DATA
 3587  031234  004737  013324                  JSR     PC,CPWR                 ;RESET TR79
 3588  031240  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3589  031244  103001                          BCC     10$                     ;NO ERROR
```

```
 3590  031246                                    ERROR                           ;REPORT ERROR
 3591  031246  104460                           TRAP    C$ERROR
 3592  031250                                10$:                        ;ON LINE AND READY
 3593  031250  004737  014066                  JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
 3594  031254  103001                          BCC     75$                     ;NO ERROR
 3595  031256                                    ERROR                           ;REPORT ERROR
 3596  031256  104460                           TRAP    C$ERROR
 3597  031260                                75$:
 3598  031260  012737  177700  002214          MOV     #-100,USEB              ;SPECIFY COUNT
 3599  031266  012737  006322  002216          MOV     #INPUT,USEC             ;SPECIFY DATA ADDRESS
 3600  031274  004737  012756                  JSR     PC,RD                   ;READ
 3601  031300  004737  017002                  JSR     PC,CHEKAZ               ;CHECK REGISTERS
 3602  031304  103001                          BCC     80$                     ;OK
 3603  031306                                    ERROR                           ;REPORT ERROR
 3604  031306  104460                           TRAP    C$ERROR
 3605  031310  004737  013324            80$:  JSR     PC,CPWR                 ;TR79 POWER CLEAR
 3606
 3607  031314                                    ENDTST
 3608  031314                                L10023:
 3609  031314  104401                           TRAP    C$ETST
 3610
 3611
 3612
 3613                                    .SBTTL  TEST4   WRITE, READ AND TEST DATA WRITTEN TO TAPE
```

```
3614
3615
3616                            ;////////////////////////////////////////////////////////////////////
3617                            ;TEST4 WRITES, READS AND TESTS DATA WRITTEN ON TAPE
3618                            ;
3619                            ;       TEST4 WRITES A FILE OF DATA TO TAPE A NUMBER OF TIMES.
3620                            ;       THE FILE CONTAINS 15 BLOCKS OF DATA. EACH TIME A BLOCK
3621                            ;       IS WRITTEN THE DATA IS READ BACK AND CHECKED.THE NUMBER
3622                            ;       OF TIMES WRITING AND CHECKING A FILE IS REPEATED IS
3623                            ;       SPECIFIED IN THE SOFTWARE P-TABLE. THE DEFAULT VALUE
3624                            ;       FOR THIS REPEAT COUNT IS 10.(DECIMAL).
3625                            ;
3626                            ;
3627                            ;       TEST4 INCLUDES:                         TEST NAME IN CZTRAB
3628                            ;
3629                            ;       INSURE WRITE RING                         TESTC
3630                            ;       REWIND AND WRITE ID BLOCK                 TESTO
3631                            ;       WRITE,SPACE REV, READ AND TEST DATA       TESTXX
3632                            ;////////////////////////////////////////////////////////////////////
3633
3634
3635
3636
3637  031316                            BGNTST
3638  031316                    T4::
3639  031316                    TEST4:                  ;TEST REPEATED WRITE, SPACE REVERSE, READ
3640                                                    ;NEGATE TR79 INTERRUPT ENABLE
3641  031316  042777  000100  150716            BIC     #BIT6,@TRCR             ;CLEAR TR79 INTERRUPT ENABLE BIT
3642                                                    ;CHECK FOR WRITE ENABLE RING
3643  031324  032777  000004  150712            BIT     #EPTS,@TRSR             ;IF WRITE ENABLE RING IS PRESENT
3644  031332  001404                            BEQ     10$                     ;  THEN CONTINUE
3645          000054                    ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
3646  031334                                    ERRSOFT ENUM,EM4A,ERR2          ;REPORT ERROR. GET RING INSTALLED
3647  031334  104457                            TRAP    C$ERSOFT
3648  031336  000054                            .WORD   44
3649  031340  021002                            .WORD   EM4A
3650  031342  017744                            .WORD   ERR2
3651  031344                    10$:                                    ;MAKE SURE TAPE IS AT LOAD POINT
3652  031344  004737  013324                    JSR     PC,CPWR                 ;RESET TR79
3653  031350  004737  014066                    JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3654  031354  103001                            BCC     15$                     ;NO ERROR
3655  031356                                    ERROR                           ;REPORT ERROR
3656  031356  104460                            TRAP    C$ERROR
3657  031360                    15$:
3658  031360  032777  000040  150656            BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3659  031366  001006                            BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3660  031370  004737  012416                    JSR     PC,RWIND                ;REWIND
3661  031374  004737  013534                    JSR     PC,CHEKI                ;CHECK REGISTERS
3662  031400  103001                            BCC     20$                     ;NO ERRORS.
3663  031402                                    ERROR                           ;REPORT ERROR
3664  031402  104460                            TRAP    C$ERROR
3665  031404                    20$:                                    ;AT LOAD POINT
3666  031404  004737  014066                    JSR     PC,TESTN                ;MAKE SURE ON LINE
3667  031410  103001                            BCC     25$                     ;OK
3668  031412                                    ERROR                           ;REPORT ERROR
3669  031412  104460                            TRAP    C$ERROR
```

```
3670  031414                          25$:                        ;WRITE IDB
3671  031414  004737  012464                JSR     PC,WTIDB              ;WRITE IDB
3672  031420  004737  014254                JSR     PC,CHEKO              ;CHECK REGISTERS
3673  031424  103001                        BCC     30$                   ;OK
3674  031426                                ERROR                         ;REPORT ERROR
3675  031426  104460                        TRAP    C$ERROR
3676  031430                          30$:                        ;ERASE
3677  031430  004737  014066                JSR     PC,TESTN              ;MAKE SURE TRANSPORT ON LINE AND READY
3678  031434  103001                        BCC     35$                   ;NO ERROR
3679  031436                                ERROR                         ;REPORT ERROR
3680  031436  104460                        TRAP    C$ERROR
3681  031440                          35$:
3682  031440  012737  177400  002214        MOV     #-400,USEB            ;SPECIFY ERASE COUNT
3683  031446  004737  013140                JSR     PC,ERS                ;ERASE
3684  031452  004737  017546                JSR     PC,CHEKFX             ;CHECK REGISTERS
3685  031456  103001                        BCC     40$                   ;OK
3686  031460                                ERROR                         ;REPORT ERROR
3687  031460  104460                        TRAP    C$ERROR
3688  031462                          40$:            ;TEST REPEATED SEQUENCE OF WRITE,SPACE REVERSE,READ
3689  031462  013746  002152                MOV     RPTCNT,-(SP)          ;COPY LOOP REPEAT COUNT
3690  031466  012704  000017          T4XX: MOV     #15.,R4               ;SPECIFY NUMBER OF BLOCKS PER LOOP
3691  031472  012703  032000                MOV     #SIZTAB,R3            ;POINT TO TABLE OF BLOCK SIZES
3692  031476  012337  002214          10$:  MOV     (R3)+,USEB            ;SPECIFY WORD COUNT
3693  031502  010346                        MOV     R3,-(SP)              ;SAVE R3 AND R4
3694  031504  010446                        MOV     R4,-(SP)
3695                                                ;WRITE
3696  031506  004737  014066                JSR     PC,TESTN              ;MAKE SURE ON LINE AND READY
3697  031512  103001                        BCC     15$                   ;OK
3698  031514                                ERROR                         ;REPORT ERROR
3699  031514  104460                        TRAP    C$ERROR
3700  031516                          15$:
3701  031516  004737  012642                JSR     PC,WRT                ;EXECUTE WRITE
3702  031522  105777  150516                TSTB    @TRSR                 ;IF AT EOT
3703  031526  100506                        BMI     100$                  ;  THEN REWIND AND EXIT TEST
3704  031530  004737  017156                JSR     PC,CHEKCX             ;CHECK REGISTERS
3705  031534  103001                        BCC     20$                   ;OK
3706  031536                                ERROR                         ;REPORT ERROR
3707  031536  104460                        TRAP    C$ERROR
3708  031540                          20$:                        ;SPACE REVERSE
3709  031540  004737  014066                JSR     PC,TESTN              ;MAKE SURE ON LINE AND READY
3710  031544  103001                        BCC     25$                   ;OK
3711  031546                                ERROR                         ;REPORT ERROR
3712  031546  104460                        TRAP    C$ERROR
3713  031550                          25$:
3714  031550  004737  013024                JSR     PC,SPR                ;SPACE REVERSE
3715  031554  004737  017416                JSR     PC,CHEKEX             ;CHECK REGISTERS
3716  031560  103001                        BCC     30$                   ;OK
3717  031562                                ERROR                         ;REPORT ERROR
3718  031562  104460                        TRAP    C$ERROR
3719  031564                          30$:                        ;READ
3720  031564  004737  014066                JSR     PC,TESTN              ;MAKE SURE ON LINE AND READY
3721  031570  103001                        BCC     35$                   ;OK
3722  031572                                ERROR                         ;REPORT ERROR
3723  031572  104460                        TRAP    C$ERROR
3724  031574                          35$:
3725  031574  004737  012756                JSR     PC,RD                 ;EXECUTE READ
```

```
3726  031600  004737  017276          JSR     PC,CHEKDX               ;CHECK REGISTERS
3727  031604  103001                  BCC     40$                     ;OK
3728  031606                          ERROR                           ;REPORT ERROR
3729  031606  104460                  TRAP    C$ERROR
3730  031610                  40$:
3731  031610  004737  014364          JSR     PC,CHEKS                ;CHECK DATA JUST READ
3732  031614  103001                  BCC     50$                     ;OK
3733  031616                          ERROR                           ;REPORT ERROR
3734  031616  104460                  TRAP    C$ERROR
3735  031620  004737  014466  50$:    JSR     PC,CHEKS1               ;CLEAR INPUT AREA
3736                                                  ;CHECK FOR REPEAT SEQUENCE
3737  031624  012604                  MOV     (SP)+,R4                ;RESTORE R3 AND R4
3738  031626  012603                  MOV     (SP)+,R3
3739  031630  005304                  DEC     R4                      ;IF NOT ALL BLOCK SIZES DONE
3740  031632  001321                  BNE     10$                     ;  THEN DO THE NEXT ONE
3741                                                  ;WRITE EOF
3742  031634  004737  014066          JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
3743  031640  103001                  BCC     55$                     ;OK
3744  031642                          ERROR                           ;REPORT ERROR
3745  031642  104460                  TRAP    C$ERROR
3746  031644                  55$:
3747  031644  004737  013072          JSR     PC,WTEOF                ;WRITE EOF(TAPE MARK)
3748  031650  105777  150370          TSTB    @TRSR                   ;IF AT EOT
3749  031654  100435                  BMI     110$                    ;  THEN REWIND AND EXIT
3750  031656  004737  013756          JSR     PC,CHEKL                ;CHECK REGISTERS
3751  031662  103001                  BCC     60$                     ;OK
3752  031664                          ERROR                           ;REPORT ERROR
3753  031664  104460                  TRAP    C$ERROR
3754  031666                  60$:                                    ;SPACE REVERSE OVER EOF
3755  031666  004737  014066          JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
3756  031672  103001                  BCC     65$                     ;OK
3757  031674                          ERROR                           ;REPORT ERROR
3758  031674  104460                  TRAP    C$ERROR
3759  031676                  65$:
3760  031676  005037  002214          CLR     USEB                    ;SPECIFY COUNT
3761  031702  004737  013024          JSR     PC,SPR                  ;SPACE REVERSE OVER EOF
3762  031706  004737  014506          JSR     PC,CHEKU                ;CHECK REGISTERS
3763  031712  103001                  BCC     70$                     ;OK
3764  031714                          ERROR                           ;REPORT ERROR
3765  031714  104460                  TRAP    C$ERROR
3766  031716                  70$:                                    ;READ EOF
3767  031716  004737  012756          JSR     PC,RD                   ;READ
3768  031722  004737  014636          JSR     PC,CHEKV                ;CHECK REGISTERS
3769  031726  103001                  BCC     80$                     ;OK
3770  031730                          ERROR                           ;REPORT ERROR
3771  031730  104460                  TRAP    C$ERROR
3772  031732                  80$:
3773  031732  005716                  TST     (SP)                    ;IF LOOP REPEAT COUNT IS NEGATIVE
3774  031734  100401                  BMI     90$                     ;  THEN REPEAT LOOP TO EOT
3775  031736  005316                  DEC     (SP)                    ;SUBTRACT 1 FROM LOOP REPEAT COUNT
3776  031740  001252          90$:    BNE     T4XX                    ;IF COUNT NOT ZERO THEN REPEAT LOOP
3777  031742  000402                  BR      110$                    ;REWIND AND EXIT TEST4
3778  031744                  100$:                                   ;AT EOT. REWIND AND EXIT TEST
3779  031744  012604                  MOV     (SP)+,R4                ;RESTORE R4 AND R3
3780  031746  012603                  MOV     (SP)+,R3
3781  031750  005726          110$:   TST     (SP)+                   ;DISCARD LOOP REPEAT COUNT
```

```
CZTRAC.P11    30-DEC-81 11:08          TEST4   WRITE, READ AND TEST DATA WRITTEN TO TAPE

 3782  031752                         T4EX:                                ;REWIND
 3783  031752  004737  014066                 JSR     PC,TESTN                    ;MAKE SURE ON LINE AND READY
 3784  031756  103001                         BCC     10$                         ;OK
 3785  031760                                 ERROR                               ;REPORT ERROR
 3786  031760  104460                         TRAP    C$ERROR
 3787  031762                         10$:
 3788  031762  004737  012416                 JSR     PC,RWIND                    ;REWIND
 3789  031766  004737  013534                 JSR     PC,CHEKI                    ;CHECK REGISTERS
 3790  031772  103001                         BCC     20$                         ;OK
 3791  031774                                 ERROR                               ;REPORT ERROR
 3792  031774  104460                         TRAP    C$ERROR
 3793  031776  000417                 20$:    BR      ENDT4                       ;EXIT TEST
 3794  032000  177777  177776  177775 SIZTAB: .WORD   -1,-2,-3,-4,-5,-6,-7,-10,-20,-40,-100,-200,-400,-1000,-2000
 3795  032006  177774  177773  177772
 3796  032014  177771  177770  177760
 3797  032022  177740  177700  177600
 3798  032030  177400  177000  176000
 3799  032036                         ENDT4:
 3800  032036                                 ENDTST
 3801  032036                         L10024:
 3802  032036  104401                         TRAP    C$ETST
 3803
 3804                                 .SBTTL  TEST5   READ DATA WRITTEN BY TEST4
```

```
3805
3806
3807                                    ;////////////////////////////////////////////////////////////////////
3808                                    ;TEST5  READ DATA WRITTEN BY TEST4
3809                                    ;
3810                                    ;       TEST5 INCLUDES:                         TEST NAME IN CZTRAB
3811                                    ;       REWIND THE TAPE                           TESTI
3812                                    ;       READ THE ID BLOCK                         TESTAW
3813                                    ;       READ THE TAPE                             TESTXY
3814                                    ;////////////////////////////////////////////////////////////////////
3815
3816
3817
3819
3819
3820  032040                                    BGNTST
3821  032040                            T5::
3822  032040                            TEST5:                  ;TEST READING DATA WRITTEN BY TEST4
3823                                                                    ;NEGATE TR79 INTERRUPT ENABLE
3824  032040  042777  000100  150174            BIC     #BIT6,@TRCR             ;CLEAR TR79 INTERRUPT ENABLE BIT
3825                                                                    ;MAKE SURE AT LOAD POINT
3826  032046  004737  013324                   JSR     PC,CPWR                 ;RESET TR79
3827  032052  004737  014066                   JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3828  032056  103001                            BCC     10$                     ;NO ERROR
3829  032060                                    ERROR                           ;REPORT ERROR
3830  032060  104460                           TRAP    C$ERROR
3831  032062                            10$:                                    ;ON LINE AND READY
3832  032062  032777  000040  150154            BIT     #LDPTS,@TRSR            ;IF AT LOAD POINT
3833  032070  001006                            BNE     20$                     ;  THEN SKIP PRELIMINARY REWIND
3834  032072  004737  012416                   JSR     PC,RWIND                ;REWIND
3835  032076  004737  013534                   JSR     PC,CHEKI                ;CHECK REGISTERS
3836  032102  103001                            BCC     20$                     ;NO ERRORS.
3837  032104                                    ERROR                           ;REPORT ERROR
3838  032104  104460                           TRAP    C$ERROR
3839  032106                            20$:                            ;AT LOAD POINT
3840  032106  004737  014066                   JSR     PC,TESTN                ;MAKE SURE TRANSPORT ON LINE AND READY
3841  032112  103001                            BCC     25$                     ;NO ERROR
3842  032114                                    ERROR                           ;REPORT ERROR
3843  032114  104460                           TRAP    C$ERROR
3844  032116                            25$:
3845  032116                            T5AW:                           ;READ IDB
3846  032116  004737  014066                   JSR     PC,TESTN                ;MAKE SURE ON LINE
3847  032122  103001                            BCC     10$                     ;OK
3848  032124                                    ERROR                           ;REPORT ERROR
3849  032124  104460                           TRAP    C$ERROR
3850  032126                            10$:
3851  032126  012737  177777  002214           MOV     #-1,USEB                ;SPECIFY COUNT FOR READ IDB
3852  032134  004737  012756                   JSR     PC,RD                   ;READ
3853  032140  004737  016262                   JSR     PC,CHEKAW               ;CHECK REGISTERS
3854  032144  103001                            BCC     20$                     ;OK
3855  032146                                    ERROR                           ;REPORT ERROR
3856  032146  104460                           TRAP    C$ERROR
3857  032150                            20$:                            ;READ DATA WRITTEN BY TEST4
3858  032150  013746  002152                   MOV     RPTCNT,-(SP)            ;COPY LOOP REPEAT COUNT
3859  032154  012704  000017           T5XY:   MOV     #15.,R4                 ;SPECIFY NUMBER OF BLOCKS PER LOOP
3860  032160  012703  032000                   MOV     #SIZTAB,R3              ;POINT TO THE TABLE OF BLOCK SIZES
```

```
3861  032164  012337  002214          10$:    MOV     (R3)+,USEB              ;SPECIFY WORD COUNT
3862  032170  010346                          MOV     R3,-(SP)                ;SAVE REGISTERS
3863  032172  010446                          MOV     R4,-(SP)
3864                                                        ;READ
3865  032174  004737  014066                  JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
3866  032200  103001                          BCC     20$                     ;OK
3867  032202                                   ERROR                           ;REPORT ERROR
3868  032202  104460                          TRAP    C$ERROR
3869  032204                          20$:
3870  032204  004737  012756                  JSR     PC,RD                   ; READ
3871  032210  105777  150030                  TSTB    @TRSR                   ;IF AT EOT
3872  032214  100435                          BMI     60$                     ; THEN REWIND AND EXIT TEST
3873  032216  004737  014364                  JSR     PC,CHEKS                ;CHECK DATA JUST READ
3874  032222  103001                          BCC     30$                     ;OK
3875  032224                                   ERROR                           ;REPORT ERROR
3876  032224  104460                          TRAP    C$ERROR
3877  032226  004737  014466          30$:    JSR     PC,CHEKS1               ;CLEAR INPUT AREA
3878  032232  012604                          MOV     (SP)+,R4                ;RESTORE REGISTERS.
3879  032234  012603                          MOV     (SP)+,R3
3880  032236  005304                          DEC     R4                      ;REDUCE COUNT. ALL BLOCK SIZES DONE?
3881  032240  001351                          BNE     10$                     ;IF NO, GO DO THE NEXT ONE
3882                                                      ;READ EOF
3883  032242  004737  014066                  JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
3884  032246  103001                          BCC     40$                     ;OK
3885  032250                                   ERROR                           ;REPORT ERROR
3886  032250  104460                          TRAP    C$ERROR
3887  032252                          40$:
3888  032252  012737  177777  002214          MOV     #-1,USEB                ;SPECIFY COUNT FOR READ EOF
3889  032260  004737  012756                  JSR     PC,RD                   ;READ EOF
3890  032264  105777  147754                  TSTB    @TRSR                   ;IF AT EOT
3891  032270  100411                          BMI     70$                     ; THEN REWIND AND EXIT TEST
3892  032272  004737  014636                  JSR     PC,CHEKV                ;CHECK REGISTERS
3893  032276  005716                          TST     (SP)                    ;IF LOOP REPEAT COUNT NEGATIVE
3894  032300  100401                          BMI     50$                     ; THEN REPEAT TO EOT
3895  032302  005316                          DEC     (SP)                    ;SUBTRACT 1 FROM LOOP REPEAT COUNT
3896  032304  001323                  50$:    BNE     T5XY                    ;REPEAT LOOP
3897  032306  000402                          BR      70$                     ;REWIND AND EXIT TEST
3898
3899  032310                          60$:                    ;AT EOT. REWIND AND EXIT TEST
3900  032310  012604                          MOV     (SP)+,R4                ;RESTORE REGISTERS.
3901  032312  012603                          MOV     (SP)+,R3
3902  032314  005726                  70$:    TST     (SP)+                   ;DISCARD LOOP REPEAT COUNT
3903  032316  004737  014066                  JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
3904  032322  103001                          BCC     75$                     ;OK
3905  032324                                   ERROR                           ;REPORT ERROR
3906  032324  104460                          TRAP    C$ERROR
3907  032326                          75$:
3908  032326  004737  012416                  JSR     PC,RWIND                ;REWIND
3909  032332  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
3910  032336  103001                          BCC     80$                     ;OK
3911  032340                                   ERROR                           ;REPORT ERROR
3912  032340  104460                          TRAP    C$ERROR
3913  032342                          80$:
3914  032342                                   ENDTST
3915  032342                          L10025:
3916  032342  104401                          TRAP    C$ETST
```

```
CZTRAC.P11    30-DEC-81 11:08          TEST5   READ DATA WRITTEN BY TEST4

  3917
  3918
  3919                                .SBTTL  TEST6   CHECK MANUAL INTERVENTION OPERATIONS
```

```
3920
3921
3922
3923                    ;////////////////////////////////////////////////////////////////
3924                    ;TEST6  CHECKS MANUAL INTERVENTION OPERATIONS
3925                    ;
3926                    ;       TEST6 CORRESPONDS TO TEST GROUP 1 FROM CZTRAB
3927                    ;
3928                    ;       TEST6   INCLUDES:                       TEST NAME IN CZTRAB
3929                    ;
3930                    ;       REMOVE WRITE RING                         TESTB
3931                    ;       TRY TO WRITE WITHOUT RING                 RUNAS
3932                    ;       INSERT WRITE RING                         TESTC
3933                    ;       DELAY 10 SECONDS                          TESTAJ
3934                    ;       TAKE UNIT OFF LINE                        TESTP
3935                    ;       TELL OPERATOR TO RESET                    TESTAK
3936                    ;       REWIND THE TAPE                           TESTI
3937                    ;       WRITE PAST EOT                            TESTAL
3938                    ;       SPACE REVERSE PAST EOT                    TESTAM
3939                    ;       READ PAST EOT                             TESTAN
3940                    ;       WRITE EOF PAST EOT                        TESTAO
3941                    ;       SPACE REVERSE OVER EOF PAST EOT           TESTAP
3942                    ;       READ EOF PAST EOT                         TESTAQ
3943                    ;       REWIND AND GO OFF LINE                    TESTQ
3944                    ;////////////////////////////////////////////////////////////////
3945
3946
3947
3948
3949
3950  032344                                    BGNTST
3951  032344                          T6::
3952  032344                          TEST6:
3953                                                    ;TEST WRITE IDB WITHOUT WRITE ENABLE RING
3954                                                            ;NEGATE TR79 INTERRUPT ENABLE
3955  032344  042777  000100  147670            BIC     #BIT6,@TRCR             ;CLEAR INTERRUPT ENABLE BIT
3956  032352                          T1B:                                      ;REMOVE WRITE ENABLE RING
3957  032352  032777  000004  147664            BIT     #BIT2,@TRSR             ;IF WRITE ENABLE RING NOT PRESENT
3958  032360  001026                            BNE     30$                     ; THEN CONTINUE TEST
3959  032362                          10$:      PRINTF  #FMTTXT,#MRMVRG         ; ELSE ASK OPERATOR TO REMOVE RING
3960  032362  012746  022024                   MOV     #MRMVRG,-(SP)
3961  032366  012746  020473                   MOV     #FMTTXT,-(SP)
3962  032372  012746  000002                   MOV     #2,-(SP)
3963  032376  010600                            MOV     SP,R0
3964  032400  104417                            TRAP    C$PNTF
3965  032402  062706  000006                   ADD     #6,SP
3966  032406  013702  002230                   MOV     DLXTOF,R2               ;SPECIFY DELAY MULTIPLIER
3967  032412  005001                            CLR     R1                      ;SPECIFY DELAY CONSTANT
3968  032414  032777  000004  147622  20$:      BIT     #BIT2,@TRSR             ;IF RING IS NOT PRESENT
3969  032422  001005                            BNE     30$                     ;  THEN KEEP CONTINUE TEST
3970  032424  005201                            INC     R1                      ;TICK
3971  032426  001372                            BNE     20$                     ;KEEP CHECKING
3972  032430  005302                            DEC     R2                      ;COUNT DOWN MULTIPLIER
3973  032432  001370                            BNE     20$                     ;KEEP CHECKING
3974  032434  000752                            BR      10$                     ;REMIND OPERATOR
3975                                                    ;MAKE SURE ON LINE
```

```
3976  032436  004737  014166          30$:    JSR     PC,TESTNN               ;WAIT FOR TRANSPORT ON LINE
3977  032442  103004                  BCC     40$                     ;OK. ON LINE WITH NO ERROR
3978          000055          ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR COUNT
3979  032444                  ERRSOFT ENUM,M2A1,ERR1                  ;REPORT ERROR
3980  032444  104457          TRAP    C$ERSOFT
3981  032446  000055          .WORD   45
3982  032450  021140          .WORD   M2A1
3983  032452  017736          .WORD   ERR1
3984  032454  004737  013354  40$:    JSR     PC,RWWAIT               ;WAIT
3985  032460  004737  013324          JSR     PC,CPWR                 ;RESET TR79
3986
3987  032464                  T1AS:                   ;WRITE IDB WITHOUT WRITE ENABLE RING
3988                                                  ;WRITE IDB
3989  032464  004737  014114          JSR     PC,TSTRDY               ;MAKE SURE READY
3990  032470  103001                  BCC     10$                     ;OK
3991  032472                  ERROR                                   ;REPORT NOT READY
3992  032472  104460          TRAP    C$ERROR
3993  032474  004737  012464  10$:    JSR     PC,WTIDB                ;WRITE IDB
3994  032500  013737  002222  002220  MOV     DLXRW,DLX               ;SET DELAY CONSTANT FOR WAIT
3995  032506  004737  013362          JSR     PC,WWAIT                ;WAIT
3996  032512  004737  013254          JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
3997  032516  012737  142632  002174  MOV     #142632,ETRCR           ;INDICATE EXPECTED RESULT
3998  032524  012737  002004  002176  MOV     #2004,ETRSR             ;INDICATE EXPECTED RESULTS
3999  032532  023737  002174  002164  CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
4000  032540  001401                  BEQ     40$                     ;COMMAND REGISTER OK
4001  032542  005202                  INC     R2                      ;INDICATE ERROR
4002  032544                  40$:
4003  032544  042737  000040  002166  BIC     #BIT5,ATRSR             ;CLEAR UNWANTED BITS
4004  032552  023737  002176  002166  CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
4005  032560  001401                  BEQ     50$                     ;STATUS REGISTER OK
4006  032562  005202                  INC     R2                      ;INDICATE ERROR
4007  032564                  50$:
4008  032564  005702                  TST     R2                      ;ANY ERRORS?
4009  032566  001404                  BEQ     80$                     ;NO
4010          000056          ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR COUNT
4011  032570                  ERRSOFT ENUM,MWENFL,ERR4                ;REPORT ERROR
4012  032570  104457          TRAP    C$ERSOFT
4013  032572  000056          .WORD   46
4014  032574  023543          .WORD   MWENFL
4015  032576  020064          .WORD   ERR4
4016  032600                  80$:
4017  032600  004737  013324          JSR     PC,CPWR                 ;RESET TR79
4018  032604                  T1C:                    ;INSTALL WRITE ENABLE RING
4019  032604  004737  013446          JSR     PC,TESTC                ;GET WRITE ENABLE RING INSTALLED
4020  032610  004737  014166  30$:    JSR     PC,TESTNN               ;WAIT FOR TRANSPORT ON LINE
4021  032614  103004                  BCC     40$                     ;OK. ON LINE. NO ERROR
4022          000057          ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR COUNT
4023  032616                  ERRSOFT ENUM,M2A1,ERR1                  ;REPORT ERROR
4024  032616  104457          TRAP    C$ERSOFT
4025  032620  000057          .WORD   47
4026  032622  021140          .WORD   M2A1
4027  032624  017736          .WORD   ERR1
4028  032626  004737  013354  40$:    JSR     PC,RWWAIT               ;WAIT
4029  032632  004737  013324          JSR     PC,CPWR                 ;RESET TR79
4030  032636  013737  002226  002220  T1AJ:   MOV     DLXBEL,DLX              ;SET 10 SECOND DELAY MULTIPLIER
4031  032644  004737  013362          JSR     PC,WWAIT                ;WAIT 10 SECONDS
```

```
4032  032650                          T1P:                    ;TAKE TRANSPORT OFF LINE USING OFF LINE COMMAND
4033  032650  004737  012532          JSR     PC,OFFLN        ;EXECUTE OFF LINE COMMAND
4034  032654  032777  002000  147362  BIT     #BIT10,@TRSR    ;IF TRANSPORT OFF LINE
4035  032662  001404                  BEQ     20$             ;  THEN CONTINUE TEST
4036          000060          ENUM = ^D<ENUM + 1>             ;INCREMENT ERROR NUMBER
4037  032664                  ERRSOFT ENUM,MUNOFL,ERR1        ;REPORT ERROR
4038  032664  104457          TRAP    C$ERSOFT
4039  032666  000060          .WORD   48
4040  032670  022545          .WORD   MUNOFL
4041  032672  017736          .WORD   ERR1
4042  032674                  20$:
4043  032674  032777  100000  147340  BIT     #BIT15,@TRCR    ;IF TR79 ERROR BIT = 1
4044  032702  001004          BNE     30$             ;  THEN CONTINUE TEST
4045                                                  ; ERROR BIT SHOULD SET WHEN TAKE UNIT
4046                                                  ; OFF LINE OPERATION IS PERFORMED
4047          000061          EMUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
4048  032704                  ERRSOFT ENUM,MOFLEFL,ERR1       ;REPORT ERROR
4049  032704  104457          TRAP    C$ERSOFT
4050  032706  000060          .WORD   48
4051  032710  022600          .WORD   MOFLEFL
4052  032712  017736          .WORD   ERR1
4053  032714                  30$:
4054  032714  004737  013324          JSR     PC,CPWR         ;RESET TR79
4055  032720                  T1AK:                   ;TEST OPERATOR RESET
4056  032720  004737  014214          JSR     PC,TESTN1       ;GET TRANSPORT ON LINE
4057  032724  103004          BCC     10$             ;OK
4058          000061          ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR COUNT
4059  032726                  ERRSOFT ENUM,M2A1,ERR1          ;REPORT ERROR
4060  032726  104457          TRAP    C$ERSOFT
4061  032730  000061          .WORD   49
4062  032732  021140          .WORD   M2A1
4063  032734  017736          .WORD   ERR1
4064  032736  004737  013354          10$:    JSR     PC,RWWAIT       ;WAIT
4065  032742  004737  013324          JSR     PC,CPWR         ;TR79 POWER CLEAR
4066  032746  004737  014114          JSR     PC,TSTRDY       ;MAKE SURE READY
4067  032752  103001          BCC     15$             ;IF NO ERROR THEN CONTINUE TEST
4068  032754                  ERROR                   ;               ELSE REPORT ERROR
4069  032754  104460          TRAP    C$ERROR
4070  032756                  15$:
4071                                                  ;REQUEST OPERATOR RESET
4072  032756  004737  013324          JSR     PC,CPWR         ;RESET TR79
4073  032762                  30$:    PRINTF  #FMTTXT,#MRSTU  ;ASK OPERATOR TO RESET TRANSPORT
4074  032762  012746  023221          MOV     #MRSTU,-(SP)
4075  032766  012746  020473          MOV     #FMTTXT,-(SP)
4076  032772  012746  000002          MOV     #2,-(SP)
4077  032776  010600                  MOV     SP,R0
4078  033000  104417                  TRAP    C$PNTF
4079  033002  062706  000006          ADD     #6,SP
4080  033006  013702  002230          MOV     DLXTOF,R2       ;SPECIFY DELAY MULTIPLIER
4081  033012  005001                  CLR     R1              ;SPECIFY DELAY CONSTANT
4082  033014  032777  002000  147222  40$:    BIT     #BIT10,@TRSR    ;IF TRANSPORT IS OFF LINE
4083  033022  001405                  BEQ     50$             ;  THEN CONTINUE TEST
4084  033024  005201                  INC     R1              ;TICK
4085  033026  001372                  BNE     40$             ;KEEP CHECKING
4086  033030  005302                  DEC     R2              ;COUNT DOWN MULTIPLIER
4087  033032  001370                  BNE     40$             ;KEEP CHECKING
```

```
4088  033034  000752                          BR      30$                     ;REMIND OPERATOR
4089
4090  033036                          50$:
4091  033036  004737  013354                  JSR     PC,RWWAIT               ;WAIT
4092  033042  004737  013254                  JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
4093  033046  012737  100036  002174          MOV     #100036,ETRCR           ;INDICATE EXPECTED RESULT
4094  033054  012737  000001  002176          MOV     #1,ETRSR                ;INDICATE EXPECTED RESULT
4095  033062  032737  100000  002164          BIT     #100000,ATRCR           ;TEST COMMAND REGISTER
4096  033070  001001                          BNE     60$                     ;COMMAND REGISTER OK
4097  033072  005202                          INC     R2                      ;NOTE ERROR
4098  033074                          60$:
4099  033074  042737  000040  002166          BIC     #BIT5,ATRSR             ;CLEAR BIT 5(LOAD POINT)
4100  033102  023737  002176  002166          CMP     ETRSR,ATRSR             ;TEST THE STATUS(INHIBIT BIT)
4101  033110  001401                          BEQ     70$                     ;OK
4102  033112  005202                          INC     R2                      ;INDICATE ERROR
4103  033114                          70$:
4104  033114  005737  002172                  TST     ATRBA                   ;TEST BUFFER ADDRESS
4105  033120  001401                          BEQ     80$                     ;ADDRESS OK
4106  033122  005202                          INC     R2                      ;INDICATE ERROR
4107  033124                          80$:
4108  033124  005737  002170                  TST     ATRWC                   ;TEST THE WORD COUNT
4109  033130  001401                          BEQ     90$                     ;OK
4110  033132  005202                          INC     R2                      ;INDICATE ERROR
4111  033134                          90$:
4112  033134  005702                          TST     R2                      ;ANY ERRORS?
4113  033136  001404                          BEQ     95$                     ;NO
4114          000062                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
4115  033140                                  ERRSOFT ENUM,MMRSFL,ERR5        ;REPORT ERROR
4116  033140  104457                          TRAP    C$ERSOFT
4117  033142  000062                          .WORD   50
4118  033144  023262                          .WORD   MMRSFL
4119  033146  020102                          .WORD   ERR5
4120  033150  004737  013324          95$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
4121
4122  033154                          T1AL:                   ;TEST TAPE FUNCTIONS EXECUTED WHILE TAPE IS BEYOND EOT
4123  033154  004737  014214          T1AG:   JSR     PC,TESTN1               ;ASK OPERATOR TO PUT TRANSPORT ON LINE
4124  033160  103004                          BCC     10$                     ;OK
4125          000063                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR COUNT
4126  033162                                  ERRSOFT ENUM,M2A1,ERR1          ;REPORT ERROR
4127  033162  104457                          TRAP    C$ERSOFT
4128  033164  000063                          .WORD   51
4129  033166  021140                          .WORD   M2A1
4130  033170  017736                          .WORD   ERR1
4131  033172  004737  013354          10$:    JSR     PC,RWWAIT               ;WAIT
4132  033176  004737  013324                  JSR     PC,CPWR                 ;TR79 POWER CLEAR
4133  033202  004737  014114                  JSR     PC,TSTRDY               ;MAKE SURE READY
4134  033206  103001                          BCC     15$                     ;IF NO ERROR THEN CONTINUE TEST
4135  033210                                  ERROR                           ;             ELSE REPORT ERROR
4136  033210  104460                          TRAP    C$ERROR
4137  033212  004737  013324          15$:    JSR     PC,CPWR                 ;TR79 POWER CLEAR
4138  033216  032777  000040  147020          BIT     #BIT5,@TRSR             ;IF AT LOAD POINT
4139  033224  001006                          BNE     20$                     ;SKIP REWIND
4140  033226  004737  012416                  JSR     PC,RWIND                ;REWIND
4141  033232  004737  013534                  JSR     PC,CHEKI                ;CHECK REGISTERS
4142  033236  103001                          BCC     20$                     ;OK
4143  033240                                  ERROR                           ;REPORT ERROR
```

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```
                                        TRAP    C$ERROR
                                20$:
                                        JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
                                        BCC     25$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                25$:                            ;FAST FORWARD TO EOT
                                        JSR     PC,CPWR                 ;RESET TR79
                                        JSR     PC,GEOT                 ;FAST FORWARD TO EOT
                                30$:    BIT     #BIT7,@TRSR             ;IF NOT AT EOT
                                        BEQ     30$                     ;  THEN WAIT
                                        JSR     PC,CHEKAG               ;CHECK REGISTERS
                                        BCC     35$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                35$:                            ;ERASE AFTER EOT
                                        JSR     PC,TESTN                ;ENSURE ON LINE AND READY
                                        BCC     40$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                40$:
                                        MOV     #-1000,USEB             ;SPECIFY COUNT FOR ERASE
                                        JSR     PC,ERS                  ;ERASE
                                        JSR     PC,RWWAIT               ;WAIT
                                        JSR     PC,TESTN                ;ENSURE ON LINE AND READY
                                        BCC     50$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                50$:                            ;WRITE AFTER EOT
                                        MOV     #-100,USEB              ;SPECIFY COUNT FOR WRITE
                                        JSR     PC,WRT                  ;WRITE
                                        JSR     PC,CHKAG1               ;CHECK REGISTERS
                                        BCC     55$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                55$:
                                T1AM:                           ;SPACE REVERSE AFTER EOT
                                        JSR     PC,TESTN                ;ENSURE ON LINE AND READY
                                        BCC     10$                     ;OK
                                        ERROR                           ;REPORT ERROR
                                        TRAP    C$ERROR
                                10$:
                                        JSR     PC,SPR                  ;SPACE REVERSE
                                        JSR     PC,RWWAIT               ;WAIT
                                        JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
                                        MOV     #3610,ETRCR             ;EXPECTED
                                        MOV     #2201,ETRSR             ;EXPECTED
                                        MOV     USEB,ETRWC              ;EXPECTED
                                        CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
                                        BEQ     40$                     ;OK
                                        INC     R2                      ;INDICATE ERROR
                                40$:
                                        CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
                                        BEQ     50$                     ;OK
                                        INC     R2                      ;INDICATE ERROR
                                50$:
```

```
 4200  033454  005737  002172                TST     ATRBA                   ;TEST BUS ADDRESS
 4201  033460  001401                        BEQ     55$                     ;OK
 4202  033462  005202                        INC     R2                      ;INDICATE ERROR
 4203  033464                        55$:
 4204  033464  023737  002200  002170        CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
 4205  033472  001401                        BEQ     60$                     ;OK
 4206  033474  005202                        INC     R2                      ;INDICATE ERROR
 4207  033476                        60$:
 4208  033476  005702                        TST     R2                      ;ANY ERRORS
 4209  033500  001404                        BEQ     70$                     ;NO
 4210          000064                ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
 4211  033502                                ERRSOFT ENUM,MSRETFL,ERR5       ;REPORT ERROR
 4212  033502  104457                        TRAP    C$ERSOFT
 4213  033504  000064                        .WORD   52
 4214  033506  023333                        .WORD   MSRETFL
 4215  033510  020102                        .WORD   ERR5
 4216  033512                        70$:
 4217  033512                        T1AN:                           ;READ AFTER EOT
 4218  033512  004737  014066                JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
 4219  033516  103001                        BCC     10$                     ;OK
 4220  033520                                ERROR                           ;REPORT ERROR
 4221  033520  104460                        TRAP    C$ERROR
 4222  033522                        10$:
 4223  033522  004737  012756                JSR     PC,RD                   ;READ
 4224  033526  004737  013354                JSR     PC,RWWAIT               ;WAIT
 4225  033532  004737  013254                JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 4226  033536  012737  002204  002174        MOV     #2204,ETRCR             ;EXPECTED
 4227  033544  012737  002201  002176        MOV     #2201,ETRSR             ;EXPECTED
 4228  033552  023737  002174  002164        CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 4229  033560  001401                        BEQ     20$                     ;OK
 4230  033562  005202                        INC     R2                      ;INDICATE ERROR
 4231  033564                        20$:
 4232  033564  023737  002176  002166        CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 4233  033572  001401                        BEQ     30$                     ;GK
 4234  033574  005202                        INC     R2                      ;INDICATE ERROR
 4235  033576                        30$:
 4236  033576  005737  002170                TST     ATRWC                   ;TEST THE WORD COUNT
 4237  033602  001401                        BEQ     40$                     ;OK
 4238  033604  005202                        INC     R2                      ;INDCATE ERROR
 4239  033606                        40$:
 4240  033606  005702                        TST     R2                      ;ANY ERRORS?
 4241  033610  001404                        BEQ     50$                     ;NO
 4242          000065                ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
 4243  033612                                ERRSOFT ENUM,MRPETFL,ERR6       ;REPORT ERROR
 4244  033612  104457                        TRAP    C$ERSOFT
 4245  033614  000065                        .WORD   53
 4246  033616  023374                        .WORD   MRPETFL
 4247  033620  020120                        .WORD   ERR6
 4248  033622                        50$:
 4249
 4250
 4251
 4252  033622                        T1AO:                   ;TEST EOF AFTER EOT FUNCTIONS
 4253  033622  004737  014066                JSR     PC,TESTN                ;GET TRANSPORT ON LINE
 4254  033626  103001                        BCC     10$                     ;OK
 4255  033630                                ERROR                           ;REPORT ERROR
```

```
                TEST6   CHECK MANUAL INTERVENTION OPERATIONS

 4256  033630  104460                        TRAP    C$ERROR
 4257  033632                        10$:                    ;WRITE EOF AFTER EOT
 4258  033632  005037  002214                CLR     USEB                    ;SPECIFY WORD COUNT
 4259  033636  004737  013072                JSR     PC,WTEOF                ;WRITE EOF
 4260  033642  004737  013354                JSR     PC,RWWAIT               ;WAIT
 4261  033646  004737  013254                JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 4262  033652  012737  003234  002174        MOV     #3234,ETRCR             ;EXPECTED
 4263  033660  012737  002211  002176        MOV     #2211,ETRSR             ;EXPECTED
 4264  033666  023737  002174  002164        CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 4265  033674  001401                        BEQ     20$                     ;OK
 4266  033676  005202                        INC     R2                      ;INDICATE ERROR
 4267  033700                        20$:
 4268  033700  023737  002176  002166        CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 4269  033706  001401                        BEQ     30$                     ;OK
 4270  033710  005202                        INC     R2                      ;INDICATE ERROR
 4271  033712                        30$:
 4272  033712  005737  002172                TST     ATRBA                   ;TEST BUFFER ADDRESS
 4273  033716  001401                        BEQ     40$                     ;OK
 4274  033720  005202                        INC     R2                      ;INDICATE ERROR
 4275  033722                        40$:
 4276  033722  005737  002170                TST     ATRWC                   ;TEST THE WORD COUNT
 4277  033726  001401                        BEQ     50$                     ;OK
 4278  033730  005202                        INC     R2                      ;INDICATE ERROR
 4279  033732                        50$:
 4280  033732  005702                        TST     R2                      ;ANY ERRORS
 4281  033734  001404                        BEQ     60$                     ;NO
 4282          000066        ENUM = ^D<ENUM + 1>                             ;INCREMENT ERROR NUMBER
 4283  033736                                ERRSOFT ENUM,MWEFETF,ERR5       ;REPORT ERROR
 4284  033736  104457                        TRAP    C$ERSOFT
 4285  033740  000066                        .WORD   54
 4286  033742  023424                        .WORD   MWEFETF
 4287  033744  020102                        .WORD   ERR5
 4288  033746                        60$:
 4289  033746                        T1AP:                   ;TEST SPACE REVERSE OVER EOF BEYOND EOT
 4290  033746  004737  013024                JSR     PC,SPR                  ;SPACE REVERSE
 4291  033752  004737  013354                JSR     PC,RWWAIT               ;WAIT
 4292  033756  004737  013254                JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
 4293  033762  012737  003610  002174        MOV     #3610,ETRCR             ;EXPECTED
 4294  033770  012737  002211  002176        MOV     #2211,ETRSR             ;EXPECTED
 4295  033776  013737  002214  002200        MOV     USEB,ETRWC              ;EXPECTED
 4296  034004  023737  002174  002164        CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
 4297  034012  001401                        BEQ     20$                     ;OK
 4298  034014  005202                        INC     R2                      ;INDICATE ERROR
 4299  034016                        20$:
 4300  034016  023737  002176  002166        CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
 4301  034024  001401                        BEQ     30$                     ;OK
 4302  034026  005202                        INC     R2                      ;INDICATE ERROR
 4303  034030                        30$:
 4304  034030  005737  002172                TST     ATRBA                   ;TEST BUFFER ADDRESS
 4305  034034  001401                        BEQ     40$                     ;OK
 4306  034036  005202                        INC     R2                      ;INDICATE ERROR
 4307  034040                        40$:
 4308  034040  023737  002200  002170        CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
 4309  034046  001401                        BEQ     50$                     ;OK
 4310  034050  005202                        INC     R2                      ;INDICATE ERROR
 4311  034052                        50$:
```

```
4312  034052  005702                        TST     R2                      ;ANY ERRORS?
4313  034054  001404                        BEQ     60$                     ;NO
4314          000067                ENUM = ^D<ENUM + 1>                    ;INCREMENT ERROR NUMBER
4315  034056                              ERRSOFT ENUM,MREFETF,ERR5         ;REPORT ERROR
4316  034056  104457                      TRAP    C$ERSOFT
4317  034060  000067                      .WORD   55
4318  034062  023474                      .WORD   MREFETF
4319  034064  020102                      .WORD   ERR5
4320  034066                        60$:
4321  034066                        T1AQ:                           ;READ EOF BEYOND EOT
4322  034066  004737  012756              JSR     PC,RD                   ;READ
4323  034072  004737  013354              JSR     PC,RWWAIT               ;WAIT
4324  034076  004737  013254              JSR     PC,CPYTRR               ;COPY TR79 REGISTERS
4325  034102  012737  002204  002174      MOV     #2204,ETRCR             ;EXPECTED
4326  034110  012737  002211  002176      MOV     #2211,ETRSR             ;EXPECTED
4327  034116  012737  006322  002202      MOV     #INPUT,ETRBA            ;EXPECTED
4328  034124  013737  002214  002200      MOV     USEB,ETRWC              ;EXPECTED
4329  034132  023737  002174  002164      CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
4330  034140  001401                      BEQ     20$                     ;OK
4331  034142  005202                      INC     R2                      ;INDICATE ERROR
4332  034144                        20$:
4333  034144  023737  002176  002166      CMP     ETRSR,ATRSR             ;TEST THE STATUS REGISTER
4334  034152  001401                      BEQ     30$                     ;OK
4335  034154  005202                      INC     R2                      ;INDICATE ERROR
4336  034156                        30$:
4337  034156  023737  002202  002172      CMP     ETRBA,ATRBA             ;TEST BUFFER ADDRESS
4338  034164  001401                      BEQ     40$                     ;OK
4339  034166  005202                      INC     R2                      ;INDICATE ERROR
4340  034170                        40$:
4341  034170  023737  002200  002170      CMP     ETRWC,ATRWC             ;TEST THE WORD COUNT
4342  034176  001401                      BEQ     50$                     ;OK
4343  034200  005202                      INC     R2                      ;INDICATE ERROR
4344  034202                        50$:
4345  034202  005702                      TST     R2                      ;ANY ERRORS?
4346  034204  001404                      BEQ     60$                     ;NO
4347          000070                ENUM = ^D<ENUM + 1>                    ;INCREMENT ERROR NUMBER
4348  034206                              ERRSOFT ENUM,MREFETF,ERR5         ;REPORT ERROR
4349  034206  104457                      TRAP    C$ERSOFT
4350  034210  000070                      .WORD   56
4351  034212  023474                      .WORD   MREFETF
4352  034214  020102                      .WORD   ERR5
4353  034216                        60$:
4354
4355  034216                        T1Q:                    ;TEST TR79 RESET WHILE REWINDING
4356  034216  004737  014066              JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
4357  034222  103001                      BCC     10$                     ;OK
4358  034224                              ERROR                           ;REPORT ERROR
4359  034224  104460                      TRAP    C$ERROR
4360  034226                        10$:                            ;POSITION TAPE AT EOT
4361  034226  032777  000200  146010      BIT     #BIT7,@TRSR             ;IF AT EOT
4362  034234  001024                      BNE     40$                     ; THEN OMIT REWIND AND GO EOT
4363  034236  032777  002000  146000      BIT     #BIT10,@TRSR            ;IF AT LOAD POINT
4364  034244  001006                      BNE     20$                     ; THEN OMIT REWIND
4365  034246  004737  012416              JSR     PC,RWIND                ;REWIND
4366  034252  004737  013534              JSR     PC,CHEKI                ;CHECK REGISTERS
4367  034256  103001                      BCC     20$                     ;OK
```

```
4368  034260
4369  034260  104460                    ERROR                           ;REPORT ERROR
4370  034262                            TRAP    C$ERROR
4371  034262  004737  014066    20$:                  ;AT LOAD POINT
4372  034266  103001                    JSR     PC,TESTN                ;MAKE SURE ON LINE AND READY
4373  034270                            BCC     25$                     ;OK
4374  034270  104460                    ERROR                           ;REPORT ERROR
4375  034272                            TRAP    C$ERROR
4376  034272  004737  012600    25$:                  ;GOEOT
4377  034276  032777  000200  145740  30$:    JSR     PC,GEOT                 ;FAST FORWARD TO EOT
4378  034304  001774                    BIT     #BIT7,@TRSR             ;WAIT FOR EOT
4379  034306                            BEQ     30$                     ;
4380  034306  004737  013324    40$:                  ;REWIND FROM EOT
4381  034312  004737  012416            JSR     PC,CPWR                 ;PRELIMINARY TR79 RESET
4382  034316  004737  013354            JSR     PC,RWIND                ;REWIND
4383                                    JSR     PC,RWWAIT               ;WAIT
4384  034322  052777  004000  145712                                    ;RESET WHILE REWINDING
4385  034330  004737  013254            BIS     #BIT11,@TRCR            ;RESET TR79
4386  034334  012737  004020  002174    JSR     PC,CPYTRR               ;COPY REGISTERS
4387  034342  012737  000001  002176    MOV     #4020,ETRCR             ;EXPECTED
4388  034350  023737  002174  002164    MOV     #1,ETRSR                ;EXPECTED
4389  034356  001401                    CMP     ETRCR,ATRCR             ;TEST COMMAND REGISTER
4390  034360  005202                    BEQ     50$                     ;OK
4391  034362                            INC     R2                      ;INDICATE ERROR
4392  034362  023737  002176  002166  50$:
4393  034370  001401                    CMP     ETRSR,ATRSR             ;TEST STATUS REGISTER
4394  034372  005202                    BEQ     60$                     ;OK
4395  034374                            INC     R2                      ;INDICATE ERROR
4396  034374  005737  002172    60$:
4397  034400  001401                    TST     ATRBA                   ;TEST BUS ADDRESS REGISTER
4398  034402  005202                    BEQ     70$                     ;OK
4399  034404                            INC     R2                      ;INDICATE ERROR
4400  034404  005737  002170    70$:
4401  034410  001401                    TST     ATRWC                   ;TEST COUNT REGISTER
4402  034412  005202                    BEQ     80$                     ;OK
4403  034414                            INC     R2                      ;INDICATE ERROR
4404  034414  005702    80$:
4405  034416  001404                    TST     R2                      ;ANY ERRORS?
4406          000071                    BEQ     90$                     ;NO
4407  034420                  ENUM = ^D<ENUM + 1>                     ;INCREMENT ERROR NUMBER
4408  034420  104457                    ERRSOFT ENUM,MRWOFL,ERR5        ;REPORT ERROR
4409  034422  000071                    TRAP    C$ERSOFT
4410  034424  022621                    .WORD   57
4411  034426  020102                    .WORD   MRWOFL
4412  034430                            .WORD   ERR5
4413  034430                  90$:
4414  034430  012746  023771            PRINTF  #FMTTXT,#MEOT           ;REPORT REWINDING,GOING OFF LINE
4415  034434  012746  020473            MOV     #MEOT,-(SP)
4416  034440  012746  000002            MOV     #FMTTXT,-(SP)
4417  034444  010600                    MOV     #2,-(SP)
4418  034446  104417                    MOV     SP,R0
4419  034450  062706  000006            TRAP    C$PNTF
4420  034454                            ADD     #6,SP
4421  034454                            ENDTST
4422  034454  104401          L10026:
4423                                    TRAP    C$ETST
```

```
4424
4425                    .SBTTL HARDWARE PARAMETER CODING SECTION
```

```
                        ;////////////////////////////////////////////////////////////////////////
                        ;/ THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                        ;/ THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                        ;/ MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                        ;/ INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                        ;/ MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                        ;/ WITH THE OPERATOR.
                        ;////////////////////////////////////////////////////////////////////////

034456                          $GNHRD
034456  000015                  .WORD L10027-L$HARD/2
034460                  L$HARD::
034460                          GPRMA   ADDRES,0,0,164000,175500,YES
034460  000031                  .WORD   T$CODE
034462  034512                  .WORD   ADDRES
034464  164000                  .WORD   T$LOLIM
034466  175500                  .WORD   T$HILIM
034470                          GPRMA   VECTOR,2,0,170,174,YES
034470  001031                  .WORD   T$CODE
034472  034540                  .WORD   VECTOR
034474  000170                  .WORD   T$LOLIM
034476  000174                  .WORD   T$HILIM
034500                          GPRMD   PRIRTY,4,0,340,4,7,YES
034500  002032                  .WORD   T$CODE
034502  034571                  .WORD   PRIRTY
034504  000340                  .WORD   340
034506  000004                  .WORD   T$LOLIM
034510  000007                  .WORD   T$HILIM
034512                          $ENDHRD
                                .EVEN
034512                  L10027:
                                .EVEN

                                .NLIST  BEX
034512  042504  044526  042503  ADDRES: .ASCIZ  /DEVICE CSR ADDRESS : /
034540  042504  044526  042503  VECTOR: .ASCIZ  /DEVICE VECTOR ADDRESS : /
034571     104  053105  041511  PRIRTY: .ASCIZ  /DEVICE PRIORITY LEVEL : /
                                .LIST   BEX
                                .EVEN


                        .SBTTL SOFTWARE PARAMETER CODING SECTION
```

```
                        ;////////////////////////////////////////////////////////////////////////
                        ;/ THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                        ;/ THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                        ;/ MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                        ;/ INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                        ;/ MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                        ;/ WITH THE OPERATOR.
                        ;////////////////////////////////////////////////////////////////////////


034622                          BGNSFT
034622  000007                  .WORD L10030-L$SOFT/2
034624                  L$SOFT::
034624                          DISPLAY SFTTXT
034624  000003                  .WORD   T$CODE
034626  034642                  .WORD   SFTTXT
034630                          GPRMD   WCOUNT,0,D,177777,0,500.,YES
034630  000052                  .WORD   T$CODE
034632  035206                  .WORD   WCOUNT
034634  177777                  .WORD   177777
034636  000000                  .WORD   T$LOLIM
034640  000764                  .WORD   T$HILIM
034642                          ENDSFT
                                .EVEN
034642                  L10030:

                                .NLIST  BEX
034642  042524  052123  020064  SFTTXT: .ASCIZ  /TEST4 REPEATEDLY WRITES A 15 BLOCK FILE TO TAPE. /
034724  042524  052123  020065          .ASCIZ  /TEST5 READS THE FILES WRITTEN BY TEST4. /
034775     124  042510  043040          .ASCIZ  /THE FOLLOWING ENTRY SPECIFIES HOW MANY FILES TEST4 /
035061     127  046111  020114          .ASCIZ  /WILL WRITE. THE DEFAULT IS 10. FILES. /
035130  047105  042524  020122          .ASCIZ  /ENTER 0 TO WRITE FILES UNTIL EOT IS REACHED /
035205     000                          .BYTE   0

035206  042522  042520  052101  WCOUNT: .ASCIZ  /REPEAT COUNT FOR TEST4 (0-500.), 0=REPEAT TO EOT /

                                .LIST   BEX
                                .EVEN


                        .SBTTL PATCH AREA FOR DEBUG
```

CZTRAC.P11 30-DEC-81 11:08 PATCH AREA FOR DEBUG

```
4498                                ;*
4499  035270                        PATCH:
4500            035370                      .=.+100
4501  035370    000240                      NOP
4502  035372    000240                      NOP
4503  035374    000240                      NOP
4504
4505                                .SBTTL ''ENDMOD'' & ''LASTAD''
4506  035376                              ENDMOD
4507  035376                              LASTAD
4508                                        .EVEN
4509  035376    000000                      .WORD   0
4510  035400    000000                      .WORD   0
4511  035402                        L$LAST::
4512
4513                                ;* NOTE: LAST ADDRESS STORAGE APPENDED
4514            000001              .END
```

CZTRAC.P11 30-DEC-81 11.08 CROSS REFERENCE TABLE -- USER SYMBOLS

```
ADDRES  034512          4441    4460#
ADR   = 000020 G         581#
AINPUT  002204           726#   1301*   1691*   1694*   2138    2160
ASSEMB= 000010           319
ATRBA   002172           721#   1350    1386    1422    1461    1499    1536    1579    1646    1682    1730    1767    1805
                        1940   2792    2862    3220    4104    4200    4272    4304    4337    4396
ATRCR   002164           718#    990    1111    1138*   1139    1163    1268    1342    1378    1414    1453    1491    1528
                        1571   1606    1638    1674    1716    1759    1797    1833    1863    1895    1926    2204    2407
                        2645   2686    2737*   2740    2784    2854    3017    3211    3999    4095    4192    4228    4264
                        4296   4329    4388
ATRSR   002166           719#   1115    1143    1167    1272    1346    1382    1418    1457    1495    1532    1575    1610
                        1642   1678    1720    1763    1801    1837    1867    1899    1930    2411    2649    2690    2744*
                        2745   2788    2858    3021    3215*   3216    4003*   4004    4099*   4100    4196    4232    4268
                        4300   4333    4392
ATRWC   002170           720#   1354    1390    1426    1465    1503    1540    1583    1614    1650    1686    1734    1771
                        1809   1841    1871    1903    1944    2796    2866    3224    4108    4204    4236    4276    4308
                        4341   4400
BADOUT  002256           773#   1728    3565
BGL   = 004000           686#
BITO  = 000001 G         554#    822     826     838     842     854     858     870     874     884     888     899     903
                         915    919     930     934     945     949     959     963     974     977    2603    2841    3195
                        3199
BIT00 = 000001 G         543#    554
BIT01 = 000002 G         542#    553
BIT02 = 000004 G         541#    552
BIT03 = 000010 G         540#    551
BIT04 = 000020 G         539#    550
BIT05 = 000040 G         538#    549
BIT06 = 000100 G         537#    548
BIT07 = 000200 G         536#    547
BIT08 = 000400 G         535#    546
BIT09 = 001000 G         534#    545
BIT1  = 000002 G         553#   1104
BIT10 = 002000 G         533#   1050    1195    1236    2734    4034    4082    4363
BIT11 = 004000 G         532#   2709    2714    2725    4384
BIT12 = 010000 G         531#   2843
BIT13 = 020000 G         530#   2843
BIT14 = 040000 G         529#
BIT15 = 100000 G         528#   1048    4043
BIT2  = 000004 G         552#   1077    1088    3957    3968
BIT3  = 000010 G         551#
BIT4  = 000020 G         550#
BIT5  = 000040 G         549#   1106    2536    2631    2668    2764    2815    4003    4099    4138
BIT6  = 000100 G         548#   2283    2380    2509    2510    2520    2521    2949    3641    3824    3955
BIT7  = 000200 G         547#   1052    4153    4361    4377
BIT8  = 000400 G         546#
BIT9  = 001000 G         545#
BOE   = 000400 G         585#
BUSY  = 000040           661#
CHEKAC  014776          1409#   3308
CHEKAD  015142          1447#   3384
CHEKAE  015316          1486#   3449
CHEKAF  015462          1523#   3514
CHEKAG  015626          1560#   4155
CHEKAV  016122          1633#   3063
CHEKAW  016262          1668#   3090    3853
```

CZTRAC.P11 30-DEC-81 11:08 CROSS REFERENCE TABLE -- USER SYMBOLS

```
CHEKAX  016460          1712#   3567
CHEKAY  016636          1754#   3581
CHEKAZ  017002          1790#   3601
CHEKCX  017156          1829#   3003    3285    3361    3437    3502    3704
CHEKDX  017276          1859#   3726
CHEKEX  017416          1890#   3296    3372    3715
CHEKFX  017546          1922#   2836    2990    3123    3188    3273    3349    3425    3490    3554    3684
CHEKI   013534          1103#   2392    2540    2635    2672    2768    2818    2971    3043    3077    3105    3170    3250
                        3326    3402    3467    3531    3661    3789    3835    3909    4141    4366
CHEKJ   013664          1133#   2555
CHEKL   013756          1159#   3129    3750
CHEKO   014254          1263#   2824    2982    3054    3116    3181    3261    3337    3413    3478    3542    3672
CHEKS   014364          1297#   3731    3873
CHEKS1  014466          1325#   3735    3877
CHEKU   014506          1338#   3142    3762
CHEKV   014636          1373#   3155    3768    3892
CHKAG1  016002          1602#   4175
CHKBRK  013442          1000    1063#   2049
CPWR    013324          1009#   1127    1150    1439    1478    1515    1552    1746    1783    1821    2038    2382    2390
                        2402    2440    2538    2624    2633    2661    2670    2757    2766    2808    2879    2950    2969
                        3033    3096    3161    3237    3241    3317    3393    3458    3522    3573    3587    3605    3652
                        3826    3985    4017    4029    4054    4065    4072    4120    4132    4137    4151    4380
CPYTRR  013254           989#   1108    1135    1160    1265    1339    1374    1410    1448    1487    1524    1568    1603
                        1634    1669    1713    1755    1792    1830    1860    1891    1923    2404    2612    2642    2683
                        2736    2780    2849    2885    2902    3014    3207    3996    4092    4188    4225    4261    4292
                        4324    4385
CURDY = 000200           663#
C$AU  = 000052           319#
C$AUTO= 000061           319#   2311
C$BRK = 000022           319#   1065
C$BSEG= 000004           319#
C$BSUB= 000002           319#
C$CEFG= 000045           319#
C$CLCK= 000062           319#
C$CLEA= 000012           319#   2324
C$CLOS= 000035           319#
C$CLP1= 000006           319#
C$CVEC= 000036           319#
C$DCLN= 000044           319#
C$DODU= 000051           319#
C$DRPT= 000024           319#
C$DU  = 000053           319#
C$EDIT= 000003           319#    410
C$ERDF= 000055           319#
C$ERHR= 000056           319#
C$ERRO= 000060           319#   2386    2395    2400    2437    2534    2543    2549    2599    2629    2638    2666    2675
                        2680    2762    2771    2776    2813    2821    2827    2832    2839    2964    2974    2979    2985
                        2993    2999    3006    3011    3038    3046    3051    3057    3066    3072    3080    3085    3093
                        3100    3108    3113    3119    3126    3132    3138    3145    3151    3158    3165    3173    3178
                        3184    3191    3245    3253    3258    3264    3269    3276    3281    3288    3293    3299    3304
                        3311    3321    3329    3334    3340    3345    3352    3357    3364    3369    3375    3380    3387
                        3397    3405    3410    3416    3421    3428    3433    3440    3445    3452    3462    3470    3475
                        3481    3486    3493    3498    3505    3510    3517    3526    3534    3539    3545    3550    3557
                        3562    3570    3577    3584    3591    3596    3604    3656    3664    3669    3675    3680    3687
                        3699    3707    3712    3718    3723    3729    3734    3745    3753    3758    3765    3771    3786
                        3792    3830    3838    3843    3849    3856    3868    3876    3886    3906    3912    3992    4069
```

CZTRAC.P11 30-DEC-81 11:08 CROSS REFERENCE TABLE -- USER SYMBOLS

```
                    4136   4144   4149   4158   4163   4171   4178   4184   4221   4256   4359   4369   437/
C$ERSF= 000054       319#
C$ERSO= 000057       319#   2419   2429   2446   2455   2464   2473   2483   2491   2500   2514   2525   2539
                     2617   2657   2698   2718   2729   2753   2804   2874   2889   2906   2956   3029   3232
                     3647   3980   4012   4024   4038   4049   4060   4116   4127   4212   4244   4284   4316
                     4349   4408
C$ESCA= 000010       319#
C$ESEG= 000005       319#
C$ESUB= 000003       319#
C$ETST= 000001       319#   2345   2915   3609   3802   3916   4422
C$EXIT= 000032       319#
C$GETB= 000026       319#
C$GETW= 000027       319#
C$GMAN= 000043       319#
C$GPHR= 000042       319#   2268
C$GPLO- 000030       319#
C$GPRI= 000040       319#
C$INIT= 000011       319#   2297
C$INLP= 000020       319#
C$MANI= 000050       319#
C$MEM = 000031       319#
C$MSG = 000023       319#   1999   2016   2055   2070   2085   2100   2115   2129   2148   2170
C$OPEN= 000034       319#
C$PNTB= 000014       319#   2035   2047   2143   2165   2192   2211   2223
C$PNTF= 000017       319#   1084   1248   3964   4078   4418
C$PNTS= 000016       319#
C$PNTX= 000015       319#
C$QIO = 000377       319#
C$RDBU= 000007       319#
C$REFG= 000047       319#
C$RESE= 000033       319#   2705
C$REVI= 000003       319#    409
C$RFLA= 000021       319#
C$RPT = 000025       319#
C$SEFG= 000046       319#
C$SPRI= 000041       319#   2282   2508   2609   2623
C$SVEC= 000037       319#   2290
C$TPRI= 000013       319#
DFPTBL  002142 G     486#
DIAGMC= 000000       319
DLX     002220       738#   1019*  1022*  1024   2723*  2847*  3061*  3994*  4030*
DLXBEL  002226       741#   4030
DLXLNG  002232       743#   3193
DLXPWR  002224       740#   2723
DLXRW   002222       739#   1022   2847   3061   3994
DLXTOF  002230       742#   1019   1086   1234   3966   4080
DOILC   013206       974#   2554
EF.CON= 000036 G     561#
EF.NEW= 000035 G     562#
EF.PWR= 000034 G     563#
EF.RES= 000037 G     560#
EF.STA= 000040 G     559#
EINPUT  002206       727#   1302*  1690*  2137   2159
EMUM  = 000061      4047#
EM2     020766      1199   2237#
EM2A    021040      1209   2043   2237#
```

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```
EM4A    021002          2237#  2431   2958   3649
EM6     021630          2237#  2891
EM7     021551          2237#  2908
ENDEMB  020464          2220   2237#
ENDIN   024176          2293   2295#
ENDT4   032036          3793   3799#
ENUM  = 000071           696#  1121#  1123   1173#  1175   1198#  1200   1208#  1210   1278#  1280   1309#  1311
                        1360#  1362   1396#  1398   1433#  1435   1472#  1474   1509#  1511   1546#  1548   1589#
                        1591   1620#  1622   1656#  1658   1699#  1701   1740#  1742   1777#  1779   1815#  1817
                        1847#  1849   1877#  1879   1909#  1911   1950#  1952   2417#  2420   2427#  2430   2444#
                        2447   2456   2465   2474   2481#  2484   2492   2501   2512#  2515   2523#  2526   2557#
                        2560   2615#  2618   2655#  2658   2696#  2699   2716#  2719   2727#  2730   2751#  2754
                        2802#  2805   2872#  2875   2887#  2890   2904#  2907   2954#  2957   3027#  3030   3230#
                        3233   3645#  3648   3978#  3981   4010#  4013   4022#  4025   4036#  4039   4047   4050
                        4058#  4061   4114#  4117   4125#  4128   4210#  4213   4242#  4245   4282#  4285   4314#
                        4317   4347#  4350   4406#  4409
EOFF  = 000010           678#
EOTS  = 000200           682#
ERASE = 000016           641#   962
ERRBIT= 100000           671#
ERRBLK  002162 G         716#  1125*  1177*  1213*  1282*  1313*  1364*  1400*  1437*  1476*  1513*  1550*  1593*
                        1624*  1660*  1703*  1744*  1781*  1819*  1851*  1881*  1913*  1954*
ERRMSG  002160 G         715#  1124*  1176*  1199*  1209*  1281*  1312*  1363*  1399*  1436*  1475*  1512*  1549*
                        1592*  1623*  1659*  1702*  1743*  1780*  1818*  1850*  1880*  1912*  1953*
ERRNBR  002156 G         714#  1123*  1175*  1200*  1210*  1280*  1311*  1362*  1398*  1435*  1474*  1511*  1548*
                        1591*  1622*  1658*  1701*  1742*  1779*  1817*  1849*  1879*  1911*  1952*
ERRTYP  002154 G         713#  1122*  1174*  1212*  1279*  1310*  1361*  1397*  1434*  1473*  1510*  1547*  1590*
                        1621*  1657*  1700*  1741*  1778*  1816*  1848*  1878*  1910*  1951*
ERR1    017736 G        1995#  3983   4027   4041   4052   4063   4130
ERR11   020136 G        2108#  2892
ERR12   020160 G        2122#  2909
ERR14   020202 G        1313   2135#
ERR15   020244 G        1703   2154#
ERR2    017744 G        2011#  2432   2959   3650
ERR3    017754 G        1213   2026#
ERR4    020064 G        1125   1177   1282   2064#  2422   2562   2660   2701   2756   3032   4015
ERR5    020102 G        1364   1400   1437   1476   1513   1550   1593   1660   1744   1781   1819   1954   2079#
                        2807   2877   3235   4119   4215   4287   4319   4352   4411
ERR6    020120 G        1624   1851   1881   1913   2094#  4247
ERS     013140           959#  2835   2989   3122   3187   3272   3348   3424   3489   3553   3683   4166
ER1     017736          1996#
ER2     017744          2012#
ER3     017754          2013   2027#
ETRBA   002202           725#  1377*  1386   1413*  1422   1451*  1461   1672*  1682   1729*  1795*  1805   1939*
                        2852*  2862   2886*  3210*  3220   4327*  4337
ETRCR   002174           722#  1109*  1111   1136*  1139   1161*  1163   1266*  1268   1340*  1342   1375*  1378
                        1411*  1414   1449*  1453   1488*  1491   1525*  1528   1569*  1571   1604*  1606   1635*
                        1638   1670*  1674   1714*  1716   1756*  1759   1793*  1797   1831*  1833   1861*  1863
                        1892*  1895   1924*  1926   2205   2405*  2407   2643*  2645   2684*  2686   2738*  2740
                        2781*  2784   2850*  2854   3015*  3017   3208*  3211   3997*  3999   4093*  4189*  4192
                        4226*  4228   4262*  4264   4293*  4296   4325*  4329   4386*  4388
ETRSR   002176           723#  1110*  1115   1137*  1143   1162*  1167   1267*  1272   1341*  1346   1376*  1382
                        1412*  1418   1450*  1457   1489*  1495   1526*  1532   1570*  1575   1605*  1610   1636*
                        1642   1671*  1678   1715*  1720   1757*  1763   1794*  1801   1832*  1837   1862*  1867
                        1893*  1899   ,925*  1930   2406*  2411   2644*  2[illegible]9  2685*  2690   2739*  2744   2782*
                        2788   2851*  2858   3016*  3021   3209*  3216   3998*  4004   4094*  4100   4190*  4196
```

```
                        4227*  4232   4263*  4268   4294*  4300   4326*  4333   4387*  4392
ET WC   002200           724#  1452*  1465   1490*  1503   1527*  1540   1637*  1650   1673*  1686   1758*  1771
                        1796*  1809   1894*  1903   2783*  2796   2853*  2866   2903*  4191*  4204   4295*  4308
                        4328*  4341
EVL    = 000004 G       579#
ESEND  = 002100         319#
ESLOAD= 000035          319#   433
FMTRGI  022103         1080   2237#
FMTTXT  020473         1081   1245   2032   2044   2237#  3961   4075   4415
FMT31   020500         2140   2162   2237#
FMT51   020566         2189   2237#
FMT52   020653         2208   2237#
FNB00  = 000002         657#
FNB01  = 000004         658#
FNB02  = 000010         659#
FNB03  = 000020         660#
FPTS   = 000004         677#   2425   2952   3643
FSAU   = 000015         319#
FSAUTO= 000020          319#   2308   2310
FSBGN  = 000040         319#    322   1972   1995   2011   2026   2064   2079   2094   2108   2122   2135   2154
                        2248   2262   2308   2321   2342   2344   2378   2914   2948   3608   3638   3801   3821
                        3915   3951   4421   4437   4478   4481   4507
FSCLEA= 000007          319#   2321   2323
FSDU   = 000016         319#
FSEND  = 000041         319#    322   1979   2000   2017   2056   2071   2086   2101   2116   2130   2149   2171
                        2298   2312   2325   2342   2344   2346   2378   2914   2916   2948   3608   3610   3638
                        3801   3803   3821   3915   3917   3951   4421   4423   4458   4492   4507
FSHARD= 000004          319#   4437   4456
FSHW   = 000013         319#    484    493
FSINIT= 000006          319#   2262   2296
FSJMP  = 000050         319#
FSMOD  = 000000         319#    322   4507
FSMSG  = 000011         319#   1995   1998   2011   2015   2026   2054   2064   2069   2079   2084   2094   2099
                        2108   2114   2122   2128   2135   2147   2154   2169
FSPROT= 000021          319#   2248   2253
FSPWR  = 000017         319#
FSRPT  = 000012         319#
FSSEG  = 000003         319#
FSSOFT= 000005          319#   4478   4490
FSSRV  = 000010         319#   1972   1977
FSSUB  = 000002         319#
FSSW   = 000014         319#    506    512
FSTEST= 000001          319#   2343   2344   2379   2914   2949   3608   3639   3801   3822   3915   3952   4421
GEOT    012600          870#   4152   4376
GOBIT  = 000001         656#   2602
GOEOT  = 001026         645#    873
GSCNTO= 000200          319#
GSDELM= 000372          319#
GSDISP= 000003          319#   4481
GSEXCP= 000400          319#
GSHILI= 000002          319#
GSLOLI= 000001          319#
GSNO   = 000000         319#
GSOFFS= 000400          319#   4440   4445   4450   4484
GSOFSI= 000376          319#   4440   4445   4450   4484
GSPRMA= 000001          319#   4440   4445
```

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```
G$PRMD= 000002            319#  4450   4484
G$PRML= 000000            319#
G$RADA= 000140            319#
G$RADB= 000000            319#
G$RADD= 000040            319#  4484
G$RADL= 000120            319#
G$RADO= 000020            319#  4440   4445   4450
G$XFER= 000004            319#
G$YES = 000010            319#  4440   4445   4450   4484
HELP  = 000000            309#   348    451    473    807
HOE   = 100000 G          592#
IBE   = 010000 G          589#
IDBF  = 000020            679#
IDU   = 000040 G          582#
IER   = 020000 G          590#
ILCMD = 040000            670#
ILC00 = 000000            634#
ILC03 = 000406            637#  2569   2601
ILC05 = 001012            639#  2569
ILC06 = 001414            640#  2569
ILC11 = 000022            643#  2569
ILC12 = 000424            644#  2569
ILC14 = 001030            646#  2569
INHBT = 000001            675#
INPUT   006322            773#   917   1297   1326   1377   1413   1451   1672   1692   1694   1795   2157   2605
                         3087*  3599   4327
INTENB= 000100            662#  2602
INTFLG  002240            749#  1974*  2284*  2606*  2613
INTIN   017720 G         1972#  2287
ISR   = 000100 G          583#
IXE   = 004000 G          588#
I$AU  = 000041            319#
I$AUTO= 000041            319#  2308#  2312#
I$CLN = 000041            319#  2321#  2325#
I$DU  = 000041            319#
I$HRD = 000041           4437#  4458#  4481
I$INIT= 0C0041            319#  2262#  2298#
I$MOD = 000041            319#   322#  4507#
I$MSG = 000041            319#  1995#  2000#  2011#  2017#  2026#  2056#  2064#  2071#  2079#  2086#  2094#  2101#
                         2108#  2116#  2122#  2130#  2135#  2149#  2154#  2171#
I$PROT= 000040            319#  2248#
I$PTAB= 000041            319#
I$PWR = 000041            319#
I$RPT = 000041            319#
I$SEG = 000041            319#  2342   2378   2948   3638   3821   3951
I$SETU= 000041            319#
I$SFT = 000041           4478#  4481   4492#
I$SRV = 000041            319#  1972#  1979#
I$SUB = 000041            319#  2342   2378   2948   3638   3821   3951
I$TST = 000041            319#  2342#  2344#  2346#  2378#  2914#  2916#  2948#  3608#  3610#  3638#  3801#  3803#
                         3821#  3915#  3917#  3951#  4421#  4423#
J$JMP = 000167            319#
LDPTS = 000040            680#  2388   2967   3040   3074   3102   3167   3247   3323   3399   3464   3528   3658
                         3832
LINPUT  002210            728#  1300*  2139   2157*  2161
LOE   = 040000 G          591#
```

```
LOGDEV  002234          747#   2265*   2267
LOT   = 000010 G        580#
L$ACP   002110 G        440#
L$APT   002036 G        398#
L$AUT   002070 G        424#
L$AUIO  024200 G        441    2308#
L$CCP   002106 G        438#
L$CLEA  024202 G        439    2321#
L$CO    002032 G        394#
L$DEPO  002011 G        376#
L$DESC  012330 G        431     797#
L$DESP  002076 G        430#
L$DEVP  002060 G        416#
L$DISP  002124 G        401     464#
L$DLY   002116 G        446#
L$DTP   002040 G        400#
L$DTYP  002034 G        396#
L$DUT   002072 G        426#
L$DVTY  012322 G        417     788#
L$EF    002052 G        411#
L$ENVI  002044 G        404#
L$ERRT  002154 G        435     712#
L$ETP   002102 G        434#
L$EXP1  002046 G        406#
L$EXP4  002064 G        420#
L$EXP5  002066 G        422#
L$HARD  034460 G        383    4437    4438#
L$HIME  002120 G        448#
L$HPCP  002016 G        382#
L$HPTP  002022 G        386#
L$HW    002142 G        387     484     485#
L$ICP   002104 G        436#
L$INIT  024034 G        437    2262#
L$LADP  002026 G        390#
L$LAST  035402 G        391    4511#
L$LOAD  002100 G        432#
L$LUN   002074 G        428#
L$MREV  002050 G        408#
L$NAME  002000 G        365#
L$PRIO  002042 G        402#
L$PROT  024026 G        443    2248#
L$PRT   002112 G        442#
L$REPP  002062 G        418#
L$REV   002010 G        374#
L$SOFT  034624 G        385    4478    4479#
L$SPC   002056 G        414#
L$SPCP  002020 G        384#
L$SPTP  002024 G        388#
L$STA   002030 G        392#
L$SW    002152 G        389     506     507#
L$TEST  002114 G        444#
L$TIML  002014 G        380#
L$UNIT  002012 G        378#
L10000  002150          484     493#
L10001  002154          506     512#
L10002  017734         1977#
```

L10003	017742	1998#				
L10004	017752	2015#				
L10005	020062	2054#				
L10006	020100	2069#				
L10007	020116	2084#				
L10010	020134	2099#				
L10011	020156	2114#				
L10012	020200	2128#				
L10013	020242	2147#				
L10014	020322	2169#				
L10016	024176	2296#				
L10017	024200	2310#				
L10020	024202	2323#				
L10021	024204	2344#				
L10022	026520	2914#				
L10023	031314	3608#				
L10024	032036	3801#				
L10025	032342	3915#				
L10026	034454	4421#				
L10027	034512	4437	4457#			
L10030	034642	4478	4491#			
MEOT	023771	2237#	4414			
MEPSRF	023712	1780	2237#			
MERFL	022014	1953	2237#			
METFL	023203	1592	2237#			
MIDSFL	022204	2237#	2527			
MIENFL	022161	2237#	2516			
MILFFL	022337	2237#	2561			
MINTFL	021707	2237#	2619			
MMRSFL	023262	2237#	4118			
MNXBFL	023046	2237#				
MNXMFL	023115	2237#	2876			
MOFLEF	022600	2237#	4051			
MPARFL	023674	1743	2237#			
MPCFL	022227	2237#	2755			
MPWCL	021443	2237#	2720			
MPWST	021500	2237#	2731			
MQM	021741	2237#				
MRCFL	023166	1436	1475	1512	1549	2237#
MRDERR	022643	1312	2237#			
MRDFL	021765	1880	2237#			
MREFET	023474	2237#	4318	4351		
MREFFL	022726	1399	2237#			
MREPFL	023746	1818	2237#			
MRIBFL	023654	1702	2237#			
MRMVRG	022024	2237#	3960			
MRPETF	023374	2237#	4246			
MRSTFL	021745	2237#				
MRSTU	023221	2237#	4074			
MRTOFL	022772	2237#				
MRW	021156	1124	2237#			
MRWLPF	022306	2237#	2421			
MRWOFL	022621	2237#	4410			
MSREFF	022665	1363	2237#			
MSRETF	023333	2237#	4214			
MSRIFL	023620	1659	2237#			

MOPPPPPPRRSSSSSXXX

```
MSRLPF  023562            2237#   2806
MSRVFL  021774            1912    2237#
MTEF   = 020000             688#
MTRDY  = 002000             666#  1203    1564
MUNOFL  022545            2237#   4040
MUEFET  023424            2237#   4286
MUEFFL  022413            1176    2237#
MUELPF  022437            2237#   2700
MUENFL  023543            2237#   4014
MUILPF  022504            1281    2237#
MUIPLF  022245            2237#   3031
MULPFL  022362            2237#   2659
MUNXFL  023012            2237#
MUPETF  023301            1623    2237#
MURTFL  021755            1850    2237#
MUTOFL  022751            2237#   3234
MXCFL   021402            2237#   2502
M16CFL  021235            2237#   2457
M16SFL  021174            2237#   2448    2485
M17CFL  021337            2237#   2475
M17SFL  021277            2237#   2466    2493
M2A     021057            1244    2237#
M2A1    021140            2031    2237#   3982    4026    4062    4129
NEWLIN  020470            2237#
NOTR79  012362             807#
NULERR  020432            1996    2052    2067    2082    2097    2112    2126    2145    2167    2219#
NXMF   = 000100             681#
OFFLN   012532             854#   4033
OFLINE= 001436             649#    857
ONLNS  = 002000             685#
OUTPUT  002262             773#    886     961    1298    1938    3197    3202    3210
O$APTS= 000000             319#    392
O$AU   = 000000             319#    424
O$BGNR= 000000             319#    418
O$BGNS= 000001             319#    347#    384
O$DU   = 000000             319#    426
O$ERRT= 000001             319#    347#    434
O$GNSW= 000001             319#    347#    388
O$POIN= 000001             319#    347#    450
O$SETU= 000000             319#    378    4509
PATCH   035270            4499#
PNT    = 001000 G           586#
PRI    = 002000 G           587#
PRIRTY  034571            4451    4460#
PRI00  = 000000 G           575#
PRI01  = 000040 G           574#
PRI02  = 000100 G           573#
PRI03  = 000140 G           572#   2608
PRI04  = 000200 G           571#
PRI05  = 000240 G           490     570#    767
PRI06  = 000300 G           569#
PRI07  = 000340 G           568#   2281    2507    2622
PRTREG  020324            2066    2081    2096    2156    2175#
PS     = 177776             615#
PSTACK  002236             748#   2263*
PWRCLR= 004000             667#   1009    1010
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RD      012756          915#  3089  3154  3307  3383  3600  3725  3767  3852  3870  3889  4223  4322
RDCNT = 001000          684#
READ  = 000004          636#   918
REWIND= 001020          642#   825
RPEF  = 100000          690#
RPTCNT  002152          509#  2292  2294* 3689  3858
RWDS  = 000002          676#
RWIND   012416          822#  2391  2403  2539  2634  2671  2767  2817  2970  3042  3076  3104  3169
                       3249  3325  3401  3466  3530  3660  3788  3834  3908  4140  4365  4381
RWWAIT  013354         1022#  1134  1159  1264  1338  1373  1409  1447  1486  1523  1561  1602  1633
                       1668  1712  1754  1791  1829  1859  1890  1922  2037  2611  3984  4028  4064
                       4091  4131  4167  4187  4224  4260  4291  4323  4382
SBIT8 = 000400          664#
SBIT9 = 001000          665#
SFPTBL  002152 G        508#
SFTTXT  034642         4482  4493#
SIZTAB  032000         3691  3794#  3860
SPACER= 001410          638#   933
SPR     013024          930#  2779  3060  3141  3295  3371  3448  3513  3580  3714  3761  4186  4290
STEF  = 010000          687#
SVCGBL= 000000          319#   322   329#  365   366   374   375   376   377   378   379   380   381
                        382   383   384   385   386   387   388   389   390   391   392   393   394
                        395   396   397   398   399   400   401   402   403   404   405   406   407
                        408   409   411   412   414   415   416   417   418   419   420   421   422
                        423   424   425   426   427   428   429   430   431   432   433   434   435
                        436   437   438   439   440   441   442   443   444   445   446   447   448
                        449   464   465   485   486   487   507   508   509   712   713   788   789
                        797   798  1972  1973  1995  1996  2011  2012  2026  2027  2064  2065  2079
                       2080  2094  2095  2108  2109  2122  2123  2135  2136  2154  2155  2248  2249
                       2262  2263  2308  2309  2321  2322  4438  4439  4479  4480  4511#  4512
SVCINS= 000000          319#   326#  366   367   368   369   370   371   372   373   374   375   376
                        377   378   379   380   381   382   383   384   385   386   387   388   389
                        390   391   392   393   394   395   396   397   398   399   400   401   402
                        403   404   405   406   407   408   409   410   411   412   413   414   415
                        416   417   418   419   420   421   422   423   424   425   426   427   428
                        429   430   431   432   433   434   435   436   437   438   439   440   441
                        442   443   444   445   446   447   448   449   450   463   464   465   466
                        467   468   469   470   471   484   485   506   507   789   790   791   798
                        803   804  1065  1066  1080  1081  1082  1083  1084  1085  1086  1244  1245
                       1246  1247  1248  1249  1250  1978  1979  1999  2000  2016  2017  2031  2032
                       2033  2034  2035  2036  2037  2043  2044  2045  2046  2047  2048  2049  2055
                       2056  2070  2071  2085  2086  2100  2101  2115  2116  2129  2130  2137  2138
                       2139  2140  2141  2142  2143  2144  2145  2148  2149  2159  2160  2161  2162
                       2163  2164  2165  2166  2167  2170  2171  2189  2190  2191  2192  2193  2194
                       2204  2205  2206  2207  2208  2209  2210  2211  2212  2213  2220  2221  2222
                       2223  2224  2225  2267  2268  2269  2270  2281  2282  2283  2286  2287  2288
                       2289  2290  2291  2292  2297  2298  2311  2312  2324  2325  2345  2346  2386
                       2387  2395  2396  2400  2401  2419  2420  2421  2422  2423  2429  2430  2431
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                       2638  2639  2657  2658  2659  2660  2661  2666  2667  2675  2676  2680  2681
                       2698  2699  2700  2701  2702  2705  2706  2718  2719  2720  2721  2722  2729
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2776 2777 2804 2805 2806 2807 2808 2813 2814 2821 2822 2827 2828
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2893 2906 2907 2908 2909 2910 2915 2916 2956 2957 2958 2959 2960
2964 2965 2974 2975 2979 2980 2985 2986 2993 2994 2999 3000 3006
3007 3011 3012 3029 3030 3031 3032 3033 3038 3039 3046 3047 3051
3052 3057 3058 3066 3067 3072 3073 3080 3081 3085 3086 3093 3094
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3139 3145 3146 3151 3152 3158 3159 3165 3166 3173 3174 3178 3179
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3258 3259 3264 3265 3269 3270 3276 3277 3281 3282 3288 3289 3293
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3961 3962 3963 3964 3965 3966 3980 3981 3982 3983 3984 3992 3993
4012 4013 4014 4015 4016 4024 4025 4026 4027 4028 4038 4039 4040
4041 4042 4049 4050 4051 4052 4053 4060 4061 4062 4063 4064 4069
4070 4074 4075 4076 4077 4078 4079 4080 4116 4117 4118 4119 4120
4127 4128 4129 4130 4131 4136 4137 4144 4145 4149 4150 4158 4159
4163 4164 4171 4172 4178 4179 4184 4185 4212 4213 4214 4215 4216
4221 4222 4244 4245 4246 4247 4248 4256 4257 4284 4285 4286 4287
4288 4316 4317 4318 4319 4320 4349 4350 4351 4352 4353 4359 4360
4369 4370 4374 4375 4408 4409 4410 4411 4412 4414 4415 4416 4417
4418 4419 4420 4422 4423 4437 4438 4440 4441 4442 4443 4444 4445
4446 4447 4448 4449 4450 4451 4452 4453 4454 4455 4456 4457 4478
4479 4481 4482 4483 4484 4485 4486 4487 4488 4489 4490 4491 4508
4509 4510 4511

SVCSUB= 000000 319# 328#
SVCTAG= 000000 319# 330# 493 494 512 513 1977 1978 1998 1999 2015 2016 2054
2055 2069 2070 2084 2085 2099 2100 2114 2115 2128 2129 2147 2148
2169 2170 2296 2297 2310 2311 2323 2324 2344 2345 2914 2915 3608
3609 3801 3802 3915 3916 4421 4422 4457 4458 4491 4492
SVCTST= 000000 319# 327# 2342 2343 2378 2379 2948 2949 3638 3639 3821 3822 3951
3952
SSLSYM= 010000 319# 494# 513# 1978# 1999# 2016# 2055# 2070# 2085# 2100# 2115# 2129# 2148#
2170# 2297# 2311# 2324# 2345# 2915# 3609# 3802# 3916# 4422# 4458# 4492#
TBA = 164006 623#
TCR = 164000 620#
TESTA 013402 828 844 860 890 905 921 936 951 965 980 1044#
TESTC 013446 1076# 2012 4019
TESTK 025222 2594 2625#
TESTM 025360 2662#
TESTN 014066 1195# 2383 2397 2434 2531 2546 2596 2626 2663 2677 2759 2773 2810
2829 2961 2976 2996 3008 3035 3048 3069 3082 3097 3110 3135 3148
3162 3175 3242 3255 3266 3278 3290 3301 3318 3331 3342 3354 3366
3377 3394 3407 3418 3430 3442 3459 3472 3483 3495 3507 3523 3536

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                        3783    3827    3840    3846    3865    3883    3903    4146    4160    4168    4181    4218    4253
                        4356    4371
TESTNN  014166          1233#   2028    3976    4020
TESTN1  014214          1243#   4056    4123
TEST2   024206          2379#
TEST4   031316          3639#
TEST5   032040          3822#
TEST6   032344          3952#
TMOUT = 000400           683#
TPT52   020454          2207    2232#
TRBA    002250           764#    824*    840*    856*    872*    886*    901*    917*    932*    947*    961*    976*    999
                        2277*   2605*   2845*   2882*   2883    3197*   3202*
TRCR    002242           761#    825*    826*    841*    842*    857*    858*    873*    874*    887*    888*    902*    903*
                         918*    919*    933*    934*    948*    949*    962*    963*    978*    996    1009*   1010    1048
                        1050    1052    1203    1205    1252    1562    1564    1566    1973*   2206    2271*   2283*   2380*
                        2441*   2442    2451*   2452    2460*   2461    2469*   2470    2478*   2479    2488    2496*   2497
                        2509*   2510    2520*   2521    2610*   2706*   2709*   2714    2725    2842*   2843*   2846*   2949*
                        3198*   3199*   3641*   3824*   3955*   4043    4384*
TRPRT   002254           767#   2279*   2286
TRSR    002244           762#    822*    838*    854*    870*    884*    899*    915*    930*    945*    959*    974*    997
                        1077    1088    1104    1106    1195    1236    2273*   2388    2425    2536    2603*   2631    2668
                        2734    2764    2815    2841*   2952    2967    3040    3074    3102    3167    3195*   3247    3323
                        3399    3464    3528    3643    3658    3702    3748    3832    3871    3890    3957    3968    4034
                        4082    4138    4153    4361    4363    4377
TRVCT   002252           766#   2278*   2288
TRWC    002246           763#    823*    839*    855*    871*    885*    900*    916*    931*    946*    960*    975*    998
                        2275*   2604*   2844*   2899*   2900    3196*   3201*
TR79    002000 G         322#
TSA   = 000172           625#
TSR   = 164002           621#
TSTINT  025066          2574#
TSTRDY  014114          1203#   2040    3989    4066    4133
TVA   = 000170           624#
TWAIT   013344          1019#
TWC   = 164004           622#
TSARGC= 000002           366#    367#    368#    369#    370#    371#   1080#   1085    1244#   1249    2031#   2036    2043#
                        2048    2137#   2144    2159#   2166    2189#   2193    2204#   2212    2220#   2224    3960#   3965
                        4074#   4079    4414#   4419
TSCODE= 000052          4440#   4445#   4450#   4481#   4484#
TSERRN= 000071           319#   2420#   2430#   2447#   2456#   2465#   2474#   2484#   2492#   2501#   2515#   2526#   2560#
                        2618#   2658#   2699#   2719#   2730#   2754#   2805#   2875#   2890#   2907#   2957#   3030#   3233#
                        3648#   3981#   4013#   4025#   4039#   4050#   4061#   4117#   4128#   4213#   4245#   4285#   4317#
                        4350#   4409#
TSEXCP= 000000          4440#   4444    4445#   4449    4450#   4455    4484#   4489
TSGMAN= 000000           319#
TSHILI= 000764          4440#   4443    4445#   4448    4450#   4454    4484#   4488
TSLAST= 000001           319#   4509#
TSLOLI= 000000          4440#   4442    4445#   4447    4450#   4453    4484#   4487
TSLSYM= 010000           319#    494     513    1978    1999    2016    2055    2070    2085    2100    2115    2129    2148
                        2170    2297    2311    2324    2345    2915    3609    3802    3916    4422    4458    4492
TSLTNO= 000006          4512#
TSNEST= 177777           319#    322#    484#    493#    506#    512#   1972#   1977#   1995#   1998#   2011#   2015#   2026#
                        2054#   2064#   2069#   2079#   2084#   2094#   2099#   2108A   2114#   2122#   2128#   2135#   2147#
                        2154#   2169#   2248#   2253#   2262#   2296#   2308#   2310#   2321#   2323#   2343#   2344#   2379#
                        2914#   2949#   3608#   3639#   3801#   3822#   3915#   3952#   4421#   4437#   4456#   4478#   4490#
```

CZTRAC.P11 30-DEC-81 11:08 CROSS REFERENCE TABLE -- USER SYMBOLS

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                    4507#
T$NS0 = 000000       322#  4507
T$NS1 = 000005       484#   493   506#   512  1972#  1977  1995#  1998  2011#  2015  2026#  2054  2064#
                    2069  2079#  2084  2094#  2099  2108#  2114  2122#  2128  2135#  2147  2154#  2169
                    2248#  2253  2262#  2296  2308#  2310  2321#  2323  2343#  2344  2379#  2914  2949#
                    3608  3639#  3801  3822#  3915  3952#  4421  4437#  4456  4478#  4490
T$PTNU= 000000       319#
T$SAVL= 177777       319#
T$SEGL= 177777       319#
T$SUBN= 000000       319#  2342#  2378#  2948#  3638#  3821#  3951#
T$TAGL= 177777       319#
T$TAGN= 010031       319#   484#   506#  1972#  1995#  2011#  2026#  2064#  2079#  2094#  2108#  2122#  2135#
                    2154#  2248#  2262#  2308#  2321#  2343#  2379#  2949#  3639#  3822#  3952#  4437#  4478#
T$TEMP= 000000       465#   466#   467#   468#   469#   470#   471#   493#   512#  1977#  1998#  2015#  2054#
                    2069#  2084#  2099#  2114#  2128#  2147#  2169#  2253#  2296#  2310#  2323#  2344#  2914#
                    3608#  3801#  3915#  4421#  4440#  4445#  4450#  4456#  4484#  4490#  4507#
T$TEST= 000006       319#  2342#  2378#  2948#  3638#  3821#  3951#  4512
T$TSTM= 177777       319#  1065   1084   1248   1999   2016   2035   2047   2055   2070   2085   2100   2115
                    2129  2143   2148   2165   2170   2192   2211   2223   2268   2282   2290   2297   2311
                    2324  2345   2386   2395   2400   2419   2429   2437   2446   2455   2464   2473   2483
                    2491  2500   2508   2514   2525   2534   2543   2549   2559   2599   2609   2617   2623
                    2629  2638   2657   2666   2675   2680   2698   2705   2718   2729   2753   2762   2771
                    2776  2804   2813   2821   2827   2832   2839   2874   2889   2906   2915   2956   2964
                    2974  2979   2985   2993   2999   3006   3011   3029   3038   3046   3051   3057   3066
                    3072  3080   3085   3093   3100   3108   3113   3119   3126   3132   3138   3145   3151
                    3158  3165   3173   3178   3184   3191   3232   3245   3253   3258   3264   3269   3276
                    3281  3288   3293   3299   3304   3311   3321   3329   3334   3340   3345   3352   3357
                    3364  3369   3375   3380   3387   3397   3405   3410   3416   3421   3428   3433   3440
                    3445  3452   3462   3470   3475   3481   3486   3493   3498   3505   3510   3517   3526
                    3534  3539   3545   3550   3557   3562   3570   3577   3584   3591   3596   3604   3609
                    3647  3656   3664   3669   3675   3680   3687   3699   3707   3712   3718   3723   3729
                    3734  3745   3753   3758   3765   3771   3786   3792   3802   3830   3838   3843   3849
                    3856  3868   3876   3886   3906   3912   3916   3964   3980   3992   4012   4024   4038
                    4049  4060   4069   4078   4116   4127   4136   4144   4149   4158   4163   4171   4178
                    4184  4212   4221   4244   4256   4284   4316   4349   4359   4369   4374   4408   4418
                    4422
T$TSTS= 000001       319#  2343#  2379#  2949#  3639#  3822#  3952#
T$$AUT= 010017      2308#  2310
T$$CLE= 010020      2321#  2323
T$$HAR= 010027      4437#  4457
T$$HW = 010000       484#   493
T$$INI= 010016      2262#  2296
T$$MSG= 010014      1995#  1998  2011#  2015  2026#  2054  2064#  2069  2079#  2084  2094#  2099  2108#
                    2114  2122#  2128  2135#  2147  2154#  2169
T$$PRO= 010015      2248#
T$$SOF= 010030      4478#  4491
T$$SRV= 010002      1972#  1977
T$$SW = 010001       506#   512
T$$TES= 010026      2343#  2344  2379#  2914  2949#  3608  3639#  3801  3822#  3915  3952#  4421
T.EDF = 000001       698#
T.EHRD= 000002       699#
T.ESF = 000000       697#
T.ESFT= 000003       700#  1122  1174  1212  1279  1310  1361  1397  1434  1473  1510  1547  1590
                    1621  1657  1700  1741  1778  1816  1848  1878  1910  1951
T1      024204 G     465  2342#
T1AG    033154      4123#
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T1AK	032720		4055#											
T1AL	033154		4122#											
T1AM	033362		4180#											
T1AN	033512		4217#											
T1AO	033622		4252#											
T1AP	033746		4289#											
T1AQ	034066		4321#											
T1AS	032464		3987#											
T1B	032352		3956#											
T1C	032604		4018#											
T1P	032650		4032#											
T1Q	034216		4355#											
T2	024206	G	466	2378#										
T2AB	026120		2809#											
T2AT	025722		2758#											
T2AU	026420		2881#											
T2BA	026460		2897#											
T2C	024360		2424#											
T2D	024410		2439#											
T2E	024640		2505#											
T2F	024674		2519#											
T2G	025514		2704#											
T2I	024214		2381#											
T2J	024722		2530#											
T3	026522	G	467	2948#										
T3AC	027740		3240#											
T3AD	030166		3316#											
T3AE	030414		3392#											
T3AF	030616		3457#											
T3AV	027014		3034#											
T3AW	027130		3068#											
T3AX	031020		3521#											
T3AY	031176		3572#											
T3AZ	031234		3586#											
T3C	026534		2951#											
T3H	026662		2995#											
T3L	027222		3095#											
T3O	026564		2966#											
T3U	027344		3134#											
T3V	027374		3147#											
T3W	027424		3160#											
T4	031316	G	468	3638#										
T4EX	031752		3782#											
T4XX	031466		3690#	3776										
T5	032040	G	469	3821#										
T5AW	032116		3845#											
T5XY	032154		3859#	3896										
T52A	020702		2232	2237#										
T52B	020717		2232	2237#										
T52C	020734		2232	2237#										
T52D	020751		2232	2237#										
T6	032344	G	470	3951#										
UAM	= 000200	G	584#											
USEA	002212		729#	977*	978	2552*	2601*	2602*	2610					
USEB	002214		730#	885	900	916	931	960	1299	1637	1673	1724	1894	1934	2640*

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                    2778*  2834*  2988*  3001*  3059*  3088*  3121*  3140*  3153*  3186*  3271*  3285*  3306*
                    3347*  3359*  3382*  3423*  3435*  3447*  3488*  3500*  3512*  3552*  3564*  3579*  3598*
                    3682*  3692*  3760*  3851*  3861*  3888*  4165*  4173*  4191   4258*  4295   4528
USEC      002216     731#   901    3565*  3599*
VECTOR    034540    4446   4460#
WCOUNT    035206    4485   4493#
WEOF   =  001034     648#   948
WIDB   =  000432     647#   841
WPEF   =  040000     689#
WRITE  =  000402     635#   887    902    2842   3198
WRT       012642     884#   2641   3002   3284   3360   3436   3501   3701   4174
WRTC      012710     899#   3566
WTEOF     013072     945#   2682   3128   3747   4259
WTIDB     012464     838#   2823   2981   3013   3053   3115   3180   3260   3336   3412   3477   3541   3671
                    3993
WWAIT     013362    1020   1023#  2724   2848   3062   3995   4031
XBA16  =  010000     668#
XBA17  =  020000     669#
XHDR      020346    2109   2123   2176   2188#
XPRT      020370    2111   2125   2178   2202#
X$ALWA=   000000     319#
X$FALS=   000040     319#
X$OFFS=   000400     319#
X$TRUE=   000020     319#
$LSTIN=   000001     324#
$LSTTA=   000001     325#
.      =  035402     315#   773#   790#   803#   807#   2238#  4500#
```

BCOMPL	1#	319#									
BERROR	1#	319#									
BGNAU	1#	319#									
BGNAUT	1#	319#	2307								
BGNCLN	1#	319#	2320								
BGNDU	1#	319#									
BGNHRD	1#	319#	4436								
BGNHW	1#	319#	483								
BGNINI	1#	319#	2261								
BGNMOD	1#	319#	321								
BGNMSG	1#	319#	1994	2010	2025	2063	2078	2093	2107	2121	2134	2153
BGNPRO	1#	319#	2247								
BGNPTA	1#	319#									
BGNRPT	1#	319#									
BGNSEG	1#	319#									
BGNSET	1#	319#									
BGNSFT	1#	319#	4477								
BGNSRV	1#	319#	1971								
BGNSUB	1#	319#									
BGNSW	1#	319#	505								
BGNTST	1#	319#	2341	2377	2947	3637	3820	3950			
BNCOMP	1#	319#									
BNERRO	1#	319#									
BREAK	1#	319#	1064								
BRESET	1#	319#	2704								
CKLOOP	1#	319#									
CLOCK	1#	319#									
CLOSE	1#	319#									
CLRVEC	1#	319#									
CLRWEN	1#	319#									
DELAY	1#	319#									
DESCRI	1#	319#	796								
DEVTYP	1#	319#	787								
DISPAT	1#	319#	462								
DISPLA	1#	319#	4480								
DOCLN	1#	319#									
DODU	1#	319#									
DORPT	1#	319#									
ENDAU	1#	319#									
ENDAUT	1#	319#	2309								
ENDCLN	1#	319#	2322								
ENDCOM	1#	319#									
ENDDU	1#	319#									
ENDHRD	1#	319#	4455								
ENDHW	1#	319#	492								
ENDINI	1#	319#	2295								
ENDMOD	1#	319#	4506								
ENDMSG	1#	319#	1997	2014	2053	2068	2083	2098	2113	2127	2146	2168
ENDPRO	1#	319#	2252								
ENDPTA	1#	319#									
ENDRPT	1#	319#									
ENDSEG	1#	319#									
ENDSET	1#	319#									
ENDSFT	1#	319#	4489								
ENDSRV	1#	319#	1976								
ENDSUB	1#	319#									

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ENDSW      1#   319#   511
ENDTST     1#   319#  2343  2913  3607  3800  3914  4420
EQUALS     1#   319#   524
ERRDF      1#   319#
ERRHRD     1#   319#
ERROR      1#   319#  2385  2394  2399  2436  2533  2542  2548  2598  2628  2637  2665  2674  2679
        2761  2770  2775  2812  2820  2826  2831  2838  2963  2973  2978  2984  2992  2998  3005
        3010  3037  3045  3050  3056  3065  3071  3079  3084  3092  3099  3107  3112  3118  3125
        3131  3137  3144  3150  3157  3164  3172  3177  3183  3190  3244  3252  3257  3263  3268
        3275  3280  3287  3292  3298  3303  3310  3320  3328  3333  3339  3344  3351  3356  3363
        3368  3374  3379  3386  3396  3404  3409  3415  3420  3427  3432  3439  3444  3451  3461
        3469  3474  3480  3485  3492  3497  3504  3509  3516  3525  3533  3538  3544  3549  3556
        3561  3569  3576  3583  3590  3595  3603  3655  3663  3668  3674  3679  3686  3698  3706
        3711  3717  3722  3728  3733  3744  3752  3757  3764  3770  3785  3791  3829  3837  3842
        3848  3855  3867  3875  3885  3905  3911  3991  4068  4135  4143  4148  4157  4162  4170
        4177  4183  4220  4255  4358  4368  4373
ERRSF      1#   319#
ERRSOF     1#   319#  2418  2428  2445  2454  2463  2472  2482  2490  2499  2513  2524  2558  2616
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        4023  4037  4048  4059  4115  4126  4211  4243  4283  4315  4348  4407
ERRTBL     1#   319#   711
ESCAPE     1#   319#
EXIT       1#   319#
FEQUAL     1#   319#
GETBYT     1#   319#
GETPRI     1#   319#
GETWOR     1#   319#
GMANIA     1#   319#
GMANID     1#   319#
GMANIL     1#   319#
GPHARD     1#   319#  2266
GPRMA      1#   319#  4439  4444
GPRMD      1#   319#  4449  4483
GPRML      1#   319#
HEADER     1#   319#   364
INLOOP     1#   319#
IOSETU     1#   319#
IOSTAR     1#   319#
KT11       1#   319#
LASTAD     1#   319#  4507
MANUAL     1#   319#
MEMORY     1#   319#
MSBYTE     1#   319#  365#  371   372   373
MSCHEC     1#   319#
MSCNTO     1#   319#  4440#  4445#  4450#  4484#
MSCOUN     1#   319#  1080#  1244#  2031#  2043#  2137#  2159#  2189#  2204#  2220#  3960#  4074#  4414#
MSDATA     1#   319#  365#  374   376   378   380   382   384   386   388   390   392   394   396
        398   400   402   404#  406   408   411   414   416   418   420   422   424   426   428
        430   432   434   436   438   440   442   444   446   448   788#  797#
MSDECR     1#   319#  493#  512#  1977#  1998#  2015#  2054#  2069#  2084#  2099#  2114#  2128#  2147#  2169#
        2253#  2296#  2310#  2323#  2344#  2914#  3608#  3801#  3915#  4421#  4456#  4490#  4507#
MSDEFA     1#   319#  4440#  4445#  4450#  4484#
MSENDE     1#   319#  493#  512#  1977#  1998#  2015#  2054#  2069#  2084#  2099#  2114#  2128#  2147#  2169#
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MSERRI     1#   319#  2419#  2429#  2446#  2455#  2464#  2473#  2483#  2491#  2500#  2514#  2525#  2559#  2617#
        2657#  2698#  2718#  2729#  2753#  2804#  2874#  2889#  2906#  2956#  3029#  3232#  3647#  3980#  4012#
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MSESCA     1#   319#
MSESCS     1#   319#
MSEXCP     1#   319#  4440#  4445#  4450#  4484#
MSEXIT     1#   319#
MSFXSE     1#   319#
MSEXTJ     1#   319#
MSGEN      1#   319#   322#   365#   374#   376#   378#   380#   382#   384#   386#   388#   390#   392#   394#
         396#   398#   400#   402#   404#   406#   408#   411#   414#   416#   418#   420#   422#   424#   426#
         428#   430#   432#   434#   436#   438#   440#   442#   444#   446#   448#   464#   485#   486#   493#
         507#   508#   512#   712#   788#   797#  1972#  1977#  1995#  1998#  2011#  2015#  2026#  2054#  2064#
        2069#  2079#  2084#  2094#  2099#  2108#  2114#  2122#  2128#  2135#  2147#  2154#  2169#  2248#  2262#
        2296#  2308#  2310#  2321#  2323#  2342#  2344#  2378#  2914#  2948#  3608#  3638#  3801#  3821#  3915#
        3951#  4421#  4438#  4457#  4479#  4491#  4511#
MSGENB     1#   319#
MSGETS     1#   319#   493#   512#  1977#  1998#  2015#  2054#  2069#  2084#  2099#  2114#  2128#  2147#  2169#
        2253#  2296#  2310#  2323#  2344#  2914#  3608#  3801#  3915#  4421#  4456#  4490#  4507#
MSGETT     1#   319#
MSGNGB     1#   319#   322#   365#   374#   376#   378#   380#   382#   384#   386#   388#   390#   392#   394#
         396#   398#   400#   402#   404#   406#   408#   411#   414#   416#   418#   420#   422#   424#   426#
         428#   430#   432#   434#   436#   438#   440#   442#   444#   446#   448#   463#   464    484#   485
         486    506#   507    508    712#   788#   797#  1972#  1995#  2011#  2026#  2064#  2079#  2094#  2108#
        2122#  2135#  2154#  2248#  2262#  2308#  2321#  4437#  4438   4478#  4479   4508#  4511
MSGNIN     1#   319#   365#   366    367    368    369    370    371#   372#   373#   374#   375    376#   377
         378#   379    380#   381    382#   383    384#   385    386#   387    388#   389    390#   391    392#
         393    394#   395    396#   397    398#   399    400#   401    402#   403    404#   405    406#   407
         408#   409    410    411#   412    413#   414#   415    416#   417    418#   419    420#   421    422#
         423    424#   425    426#   427    428#   429    430#   431    432#   433    434#   435    436#   437
         438#   439    440#   441    442#   443    444#   445    446#   447    448#   449    463#   465#   466#
         467#   468#   469#   470#   484#   506#   788#   789    790    797#   798    803    1065#  1080#  1081#
        1082#  1083   1084#  1085   1244#  1245#  1246#  1247   1248#  1249   1977#  1978   1999#  2016#  2031#
        2032#  2033#  2034   2035#  2036   2043#  2044#  2045#  2046   2047#  2048   2055#  2070#  2085#  2100#
        2115#  2129#  2137#  2138#  2139#  2140#  2141#  2142   2143#  2144   2148#  2159#  2160#  2161#  2162#
        2163#  2164   2165#  2166   2170#  2189#  2190#  2191   2192#  2193   2204#  2205#  2206#  2207#  2208#
        2209#  2210   2211#  2212   2220#  2221#  2222   2223#  2224   2267#  2268#  2269#  2281#  2282#  2286#
        2287#  2288#  2289#  2290#  2291   2297#  2311#  2324#  2345#  2386#  2395#  2400#  2419#  2420#  2421#
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        3093#  3100#  3108#  3113#  3119#  3126#  3132#  3138#  3145#  3151#  3158#  3165#  3173#  3178#  3184#
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        3304#  3311#  3321#  3329#  3334#  3340#  3345#  3352#  3357#  3364#  3369#  3375#  3380#  3387#  3397#
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        3843#  3849#  3856#  3868#  3876#  3886#  3906#  3912#  3916#  3960#  3961#  3962#  3963   3964#  3965
        3980#  3981#  3982#  3983#  3992#  4012#  4013#  4014#  4015#  4024#  4025#  4026#  4027#  4038#  4039#
        4040#  4041#  4049#  4050#  4051#  4052#  4060#  4061#  4062#  4063#  4069#  4074#  4075#  4076#  4077
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```

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        4446   4447   4448   4450#  4451   4452   4453   4454   4456#  4478#  4481#  4482#  4484#  4485   4486
        4487   4488   4490#  4508#  4509#  4510#
MSGNLS     1#  319#
MSGNSU     1#  319#
MSGNTA     1#  319#   493#   512#  1977#  1998#  2015#  2054#  2069#  2084#  2099#  2114#  2128#  2147#  2169#
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MSGNTE     1#  319#  2342#  2378#  2948#  3638#  3821#  3951#
MSHAPT     1#  319#   365#
MSHNAP     1#  319#   365#   404
MSINCR     1#  319#   322#   484#   506#  1065#  1084#  1248#  1972#  1995#  1999#  2011#  2016#  2026#  2035#
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        2154#  2165#  2170#  2192#  2211#  2223#  2248#  2262#  2268#  2282#  2290#  2297#  2308#  2311#  2321#
        2324#  2342#  2343#  2345#  2378#  2379#  2386#  2395#  2400#  2419#  2429#  2437#  2446#  2455#  2464#
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        4060#  4069#  4078#  4116#  4127#  4136#  4144#  4149#  4158#  4163#  4171#  4178#  4184#  4212#  4221#
        4244#  4256#  4284#  4316#  4349#  4359#  4369#  4374#  4408#  4418#  4422#  4437#  4478#
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MSLDRO     1#  319#  2267#  2281#  2507#  2608#  2622#
MSMASK     1#  319#
MSMCHI     1#  319#
MSMCLO     1#  319#
MSMSK1     1#  319#
MSPOP      1#  319#   493#   512#  1977#  1998#  2015#  2054#  2069#  2084#  2099#  2114#  2128#  2147#  2169#
        2253#  2296#  2310#  2323#  2344#  2914#  3608#  3801#  3915#  4421#  4456#  4490#  4507#
MSPRIN     1#  319#  1080#  1244#  2031#  2043#  2137#  2159#  2189#  2204#  2220#  3960#  4074#  4414#
MSPUSH     1#  319#   322#   484#   506#  1972#  1995#  2011#  2026#  2064#  2079#  2094#  2108#  2122#  2135#
        2154#  2248#  2262#  2308#  2321#  2342#  2343   2378#  2379   2948#  2949   3638#  3639   3821#  3822
        3951#  3952   4437#  4478#
MSPUT      1#  319#  1080#  1244#  2031#  2043#  2137#  2159#  2189#  2204#  2220#  2286#  3960#  4074#  4414#
MSPUT1     1#  319#  1080#  1081   1082   1244#  1245   1246   2031#  2032   2033   2043#  2044   2045   2137#
        2138   2139   2140   2141   2159#  2160   2161   2162   2163   2189#  2190   2204#  2205   2206   2207
        2208   2209   2220#  2221   2286#  2287   2288   2289   3960#  3961   3962   4074#  4075   4076   4414#
        4415   4416
MSRADI     1#  319#  4440#  4445#  4450#  4484#
MSRBRO     1#  319#
MSRNRO     1#  319#  2267#  2269
MSSETS     1#  319#   322#   484#   506#  1972#  1995#  2011#  2026#  2064#  2079#  2094#  2108#  2122#  2135#
        2154#  2248#  2262#  2308#  2321#  2343#  2379#  2949#  3639#  3822#  3952#  4437#  4478#
MSSTAR     1#  319#
MSSVC      1#  319#  1065#  1080#  1084   1244#  1248   1998#  1999   2015#  2016   2031#  2035   2043#  2047
        2054#  2055   2069#  2070   2084#  2085   2099#  2100   2114#  2115   2128#  2129   2137#  2143   2147#
        2148   2159#  2165   2169#  2170   2189#  2192   2204#  2211   2220#  2223   2267#  2268   2281#  2282
```

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	2437#	2446	2455	2464	2473	2483	2491	2500	2507#	2508	2514	2525	2534#	2543#	2549#
	2559	2599#	2608#	2609	2617	2622#	2623	2629#	2638#	2657	2666#	2675#	2680#	2698	2705#
	2718	2729	2753	2762#	2771#	2776#	2804	2813#	2821#	2827#	2832#	2839#	2874	2889	2906
	2914#	2915	2956	2964#	2974#	2979#	2985#	2993#	2999#	3006#	3011#	3029	3038#	3046#	3051#
	3057#	3066#	3072#	3080#	3085#	3093#	3100#	3108#	3113#	3119#	3126#	3132#	3138#	3145#	3151#
	3158#	3165#	3173#	3178#	3184#	3191#	3232	3245#	3253#	3258#	3264#	3269#	3276#	3281#	3288#
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	3387#	3397#	3405#	3410#	3416#	3421#	3428#	3433#	3440#	3445#	3452#	3462#	3470#	3475#	3481#
	3486#	3493#	3498#	3505#	3510#	3517#	3526#	3534#	3539#	3545#	3550#	3557#	3562#	3570#	3577#
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	3838#	3843#	3849#	3856#	3868#	3876#	3886#	3906#	3912#	3915#	3916	3960#	3964	3980	3992#
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	4171#	4178#	4184#	4212	4221#	4244	4256#	4284	4316	4349	4359#	4369#	4374#	4408	4414#
	4418	4421#	4422												
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	2705#	2718#	2729#	2753#	2762#	2771#	2776#	2804#	2813#	2821#	2827#	2832#	2839#	2874#	2889#
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	3057#	3066#	3072#	3080#	3085#	3093#	3100#	3108#	3113#	3119#	3126#	3132#	3138#	3145#	3151#
	3158#	3165#	3173#	3178#	3184#	3191#	3232#	3245#	3253#	3258#	3264#	3269#	3276#	3281#	3288#
	3293#	3299#	3304#	3311#	3321#	3329#	3334#	3340#	3345#	3352#	3357#	3364#	3369#	3375#	3380#
	3387#	3397#	3405#	3410#	3416#	3421#	3428#	3433#	3440#	3445#	3452#	3462#	3470#	3475#	3481#
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MSWORD	1#	319#	404#	413	463#	465	466	467	468	469	470	2419#	2420	2421	2422
	2429#	2430	2431	2432	2446#	2447	2448	2449	2455#	2456	2457	2458	2464#	2465	2466
	2467	2473#	2474	2475	2476	2483#	2484	2485	2486	2491#	2492	2493	2494	2500#	2501
	2502	2503	2514#	2515	2516	2517	2525#	2526	2527	2528	2559#	2560	2561	2562	2617#
	2618	2619	2620	2657#	2658	2659	2660	2698#	2699	2700	2701	2718#	2719	2720	2721
	2729#	2730	2731	2732	2753#	2754	2755	2756	2804#	2805	2806	2807	2874#	2875	2876
	2877	2889#	2890	2891	2892	2906#	2907	2908	2909	2956#	2957	2958	2959	3029#	3030
	3031	3032	3232#	3233	3234	3235	3647#	3648	3649	3650	3980#	3981	3982	3983	4012#

CZTRAC.P11 30-DEC-81 11:08 CROSS REFERENCE TABLE -- MACRO NAMES

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        4060#  4061   4062   4063   4116#  4117   4118   4119   4127#  4128   4129   4130   4212#  4213   4214
        4245   4246   4247   4284#  4285   4286   4287   4316#  4317   4318   4319   4349#  4350
        4351   4352   4408#  4409   4410   4411   4440#  4445#  4450#  4481#  4482   4484#  4509   4510
MSXFER    1#   319#
OPEN      1#   319#
POINTE    1#   319#   346
PRINTB    1#   319#   2030   2042   2136   2158   2188   2203   2219
PRINTF    1#   319#   1079   1243   3959   4073   4413
PRINTS    1#   319#
PRINTX    1#   319#
PEADBU    1#   319#
READEF    1#   319#
RFLAGS    1#   319#
SETPRI    1#   319#   2280   2506   2607   2621
SETVEC    1#   319#   2285
SLASH     1#   319#
STARS     1#   319#
SVC       1#   317#   318
XFER      1#   319#
XFERF     1#   319#
XFERT     1#   319#

. ABS.  035402     000

 ERRORS DETECTED:  0

CZTRAC.BIN/I,CZTRAC.SEQ/CRF/SOL/NL:TOC=SVC34R.MLB,CZTRAC.P11
RUN-TIME: 16 21 2 SECONDS
RUN-TIME RATIO: 64/39=1.6
CORE USED:  16K  (31 PAGES)
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